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SOME MATTERS OF INTEREST TO THE GENERAL PRACTITIONER AND THE VETERINARY INSPECTOR*

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When I received your President's kind but peremptory invitation 14 days ago to attend this meeting and address you on some subject of mutual interest, I felt that I could not lightly decline the honour or deny myself the pleasure of meeting the members of your Division, and having precipitately telegraphed in the affirmative to keep alive the fire of his enthusiasm, I have thus far kept my appointment.

Your advertisement in the *Veterinary Record* intimates that I "will read a paper on some subject of general interest"—it had to be sent off before my decision was made—and it is just as well that I was granted some latitude, for, as your President understands, circumstances made it impossible for me to write a cut-and-dried paper on a particular subject.

With your approval, therefore, I propose to speak on several issues which may be of interest alike to the general practitioner and the Veterinary Inspector and it may be that I will be able to present some items of experience that will stimulate thought, distil a grain of truth or, better perhaps, stir some healthy opposition and so beget a good discussion.

ANTHRAX

In speaking a preliminary word on a subject so orthodox as anthrax, my chief object is to lead up to some consideration of the causes of death in the numerous "negative" cases we are called to inspect.

The acknowledged relationship of the great majority of anthrax outbreaks to the use of foreign foodstuffs is a remarkable basic fact that rests almost entirely on circumstantial evidence which is in some cases peculiarly conclusive, but it seems to be beyond the capacity of bacteriologists to demonstrate the presence of the infection in the suspected foodstuffs by present-day laboratory methods and the attempt has in great measure been given up.

We are experiencing fewer outbreaks of the disease in the last few years in Lanarkshire, where we have averaged only 15 per year in the last six years and only three outbreaks since January 1st, 1932.

*Presented to the Yorkshire Division, N.V.M.A., at Leeds, April 29th, 1932.

In 1919 when shipping was not available for the transport of artificial feeding stuffs, we had only six outbreaks. However, as soon as ships were released in 1920, outbreaks in that year rose to 37 and in the following year to 40.

Incidentally it may be asked, in these days of tariffs, why we should not grow more beans in this country, for bean meal is about the best milk-raising foodstuff known and this would with certainty cut out many outbreaks of anthrax.

Procedure at Inspection of Carcass.

A small incision, to the effusion of blood, is made in the back of the ear or on the tail. A swab is soaked in the blood and the incision sealed with a hot iron. A smear is made from the swab and after it has been dried, fixed and stained with M'Fadyean's Methylene Blue it is examined microscopically. If the case proves "positive" other smears are made, one of which is dispatched with the swab in a special fitment to the laboratory of the Ministry of Agriculture to enable them to check the diagnosis, in terms of the Anthrax Order.

In only three cases occurring in the county in 21 years (each representing an anthrax carcass much decomposed through late discovery or late reporting of the animal's death) has it been found necessary to check the result of the microscopical examination (rendered doubtful through the presence of great numbers of the bacilli of decomposition) by a cultural or biological test before reporting to the Ministry, and as the former test can be completed and a conclusion arrived at in 12 hours, the report in each case was held up for that time. On no occasion has the Ministry failed to corroborate our diagnosis.

The natural openings of the anthrax cadaver are at once plugged with material soaked in a disinfectant solution. Instructions are then given, according to the needs of the case, regarding the feeding of the remaining animals and the disinfection of persons, utensils, premises, etc., the latter being supervised and for the most part carried out by the police as soon as possible after we have notified them of the outbreak.

Instead of burning or burying the anthrax carcass on the farm, we get it immediately removed to a knackery in a specially designed, leak-proof, galvanised-iron box belonging to the county council and retained at the knackery, where it is disinfected on each occasion after use. At the knackery the carcass is lifted by

crane into an upright digester capable of receiving it without mutilation. In the digester it is submitted to super-heated steam under a pressure of 50-lbs. per square inch for six hours, which reduces everything to a small barrow load of powder that is thrown into a furnace.

We pay the knacker £2 10s. per carcass and a mileage rate above 20 miles.

Two contiguous county authorities have the liberty of using our anthrax box for a nominal consideration.

In almost every case we remove the restrictions imposed under Form A within 10 days of the occurrence of the outbreak.

By expeditious diagnosis, the speedy removal of the carcass and infected clothing, etc., by experts and efficient and prompt disinfection, we have been able to limit the infection in 95 per cent. of outbreaks to the original case.

Occasionally when an animal has died of anthrax, we find that one or more of its neighbours is ill with an abnormally high temperature. Such animals we put into isolation and occasionally one has died of anthrax very soon, while the others have recovered. In an odd case (often a bull), the animal puts up a good fight over several days, when the suspected animal eventually dies of anthrax. On two occasions we have been able to demonstrate bacilli in the blood of the live animal one hour before death and in a third case as soon as 7½ hours before death occurred.

In our experience it is possible to determine a positive or negative diagnosis by a naked-eye examination of the smear stained with M'Fadyean's Methylene Blue in almost every case, although the microscope is always used in confirmation. The negative smear is invariably grass-green, unless polluted with bacilli of decomposition, when its colour approaches Prussian blue, whereas the positive smear invariably yields the characteristic purple of the recognised M'Fadyean reaction.

For upwards of 25 years the County of Lanark has had the advantage of the Diseases of Animals (Lanarkshire) Order of 1907 as a handmaid to the Anthrax Order. It was a pioneer Order and has been copied by several other authorities, and in practice its terms roughly require the reporting of the death of every bovine animal that has not been attended by a veterinary surgeon who is able to certify that the death was not due to anthrax. It provides a much closer sieve for the detection of anthrax than the Anthrax Order itself.

NEGATIVE CASES

In 21 years negative cases have averaged 252 per annum.

With few exceptions, the animals represented in these negative cases have died suddenly or unexpectedly and if some of them have been seen or attended by a veterinary surgeon, they have been reported because he did not feel justified in certifying that the animal had not died of anthrax.

The causes which operate to produce death in these negative cases stir the imagination considerably.

From the evidence we have been able to glean, it would seem that over 50 per cent. of the whole of these deaths have been due to tetany —call it what you will: milk fever, hypocalcæmia, hypoglycæmia, stomach staggers, grass staggers, epilepsy, fits, etc.—while of the aged cows involved in the number, the percentage so dying has been much higher.

The loss is all the more serious in the case of dairy cows because the animals are so often at the height of lactation, and one can only regret the owner's failure to interpret the significance of the premonitory signs of the impending and frequently explosive hysterical state.

Knowing as we do how effective the present-day treatment of the practitioner is to rescue such cases from the very jaws of death, it would seem to be an urgent matter that owners should be instructed regarding the early symptoms of an affection so often amenable to timeous treatment and so fatal if not attended to.

The deep-milking cow especially, which falters for no very apparent reason while her neighbours do well under a common régime, is at once in need of close observation, but too often because she has been seen chewing the cud, however nonchalantly it may have been, she is regarded as but little amiss, when an enlightened observer would have noted that rumination was quite perfunctory in character with probably only a dozen or so of cuts being given to each bolus sent up, instead of 60 or more.

[Mr. Begg at this stage made pointed reference to the main features of normal and abnormal rumination in cattle and the great diagnostic value of close observation in the quality of cud chewing in animals slightly off colour.]

Inasmuch as we know that cows in this country are not subject to any specific catarrhal fever such as influenza in horses or man or distemper in dogs, etc., we should, when estimating any ill-defined indisposition in them, beware of an oncoming tetany and should not readily or wantonly imagine the operation of a so-called chill or dietetic error in a cow in these days of rational feeding, and especially when neighbours are prospering on the rations offered to her.

My obvious suggestion to you is that many cows that are dead and many more that have only been treated when they have actually gone

down, did actually give early hints of their need for calcium and that instead of relying entirely on drenches and tonic mixtures, it would be well to do what is apparently somewhat unorthodox and designedly restore the calcium content of the blood when the animal is thought to have little the matter with her.

The article I wrote about 20 years ago in Hoare's System of Veterinary Medicine on "Parturient Dyspepsia"—a cloak for real ignorance—shows the groping of mind I experienced in an attempt to exhibit the sinister influence of the then unknown etiological factor in milk fever as the paralysing agent operating so often to reduce the efficiency of important organs.

If it be that a hypocalcæmic state is the basic quality that causes tetany, whether in milk cows, young bovines, parturient sheep or the ponies of the Devonshire downs, etc., is it not likely that much of our land has been harried of its calcium content throughout the ages by the animals it has nourished in bone, sinew, and to milk production, until presumably the crops grown on it are radically deficient in calcium?

Moreover, even in our best agricultural holdings, the sufficient use of lime as a fertiliser has gone by default. Forty or fifty years ago thousands of tons of gas lime were used as a fertiliser in my native district yearly, but in these days none is available.

It may interest you if I recall that in May, 1917, when on the 6th of the month, wintry conditions suddenly gave way to balmy summer weather and grass came away luxuriantly, we experienced in the West of Scotland an epidemic of sudden deaths from tetany. I inspected 70 carcasses before the month was out, of which 46 were cows that had calved within one or two months and there were very many others that were not reported because they had been seen by veterinary surgeons who had been called in too late for effective treatment.

Stockowners, tired of the heavy cost of winter feeding, too suddenly allowed their cattle the quick and complete change from winter rations to newly-grown grass.

I made a special report on the matter to my Council, directing attention to the extreme danger attached to such a sudden change; representations were made to the Board of Agriculture, etc., and although at the time Sir Stewart Stockman, whom I chanced to meet, did not fully agree with my view, the Board, in the early spring of the next year, published a warning to stockowners, quoting my report, that they should be careful in the event of a sudden change in the month of May not to put out their cows too suddenly.

Recently research workers have shown at the Hannah Dairy Research Institute in Scotland that the injection of certain nitrogenous substances into animals has the effect of lowering the blood calcium content. In the light of that finding and knowing that young grass is proverbially rich in protein content, it seems reasonable to conclude that the sudden and plentiful substitution of it for winter feeding may have been the cause of that widespread outbreak of fatal tetany.

There is little wonder that our forefathers referred to such cases as grass staggers and presupposed especially that ryegrass when quickly grown developed toxic qualities that could madden and kill bovines.

I must apologise for dealing at such length with a subject in which I am greatly interested for the reason that I was in close touch with the losses sustained. It was my invariable procedure, when in practice over 20 years ago, to inject the udder of every cow that showed drunken movements or which could not rise, and that often in the face of much opposition from the owners. The efficiency of that empirical treatment has now been explained by research workers and alternative methods of restoring a lowered blood calcium content have been indicated and put into successful operation.

It would be a great boon if some bio-chemist could devise a simple field test for the early determination of the calcium content of the blood.

CHRONIC EMACIATION

I now propose to deal shortly with some other interesting questions.

The cow that is gradually becoming emaciated from causes other than acute inflammatory diseases is always of interest to the practitioner or the Inspector.

One only suspects underfeeding when the lack of condition is general in the herd. Emaciation is often seen in cases of abdominal traumatism with gross peritoneal mischief. It is worthy of note that in 50 per cent. of aged cows killed under the Tuberculosis Order, one finds evidence that at some time or other the animal has suffered the pain caused by a foreign body which has escaped from the stomach.

Johne's disease, it will be admitted, is the most potent disease of all in inducing progressive and complete emaciation. It is very evidently extending over this and other countries and there are many atypical cases disclosed at our abattoirs that had not yet become emaciated or suffered from diarrhœa.

Too often we find that where cases prevail, the animals habitually drink contaminated ditch or pond water. If the natural water supply of grazing lands is not a plentiful running stream, all drinking water should be brought to troughs three feet high to avoid pollution by the fæces of thirsty, scouring

animals. Measures of control are urgently needed, but the problem presents many difficulties with which you are all familiar.

I wonder if any of you have noted the condition of the mucosa of the abomasum in almost every case of Johne's disease. When the organ is opened and held up the mucosa hangs loose in numerous pear-shaped dropsical swellings.

Again the Veterinary Inspector is of course always on the outlook for tuberculosis as a cause of lost condition of body.

The microscopic examination of all sputa found on the wall in front of cows is of the greatest importance, for the great majority of them that are tough and glutinous contain tubercle bacilli coughed up from open lesions in the respiratory tract.

The schema for the examination of the cow's chest is a subject requiring deeper study which I commend to any of you who have time and opportunity to give it the consideration it deserves.

Abnormal respiratory sounds heard on auscultation of the bovine lungs may confidently be regarded as due to tuberculosis in the non-febrile animal, seeing that bovines are so seldom the subjects of pneumonia of the quality which we find in horses, dogs, etc. I do not deny that they may suffer from pneumonia caused by improper drenching, parasitism, metastasis or through living for a time in a polluted atmosphere that is definitely irritating, but as I have said they are not subject to any specific catarrhal fever to which, in other species, pneumonia is such a common sequel.

It is significant that stockowners attach so little importance to "coughing" in their herds as a possible symptom of important disease—they are invariably full of excuses for the coughing they hear when their attention is directed to it.

I have here for your inspection a preserved specimen of bovine intestine showing tuberculous ulceration of the mucosa. It was taken from a cow slaughtered under the Tuberculosis Order which had a considerable length of the bowel so affected.

When a slide was laid on any part of the abnormal mucosa, after it had been rinsed with water and thereafter dried and stained, many tubercle bacilli were seen on every field. Such a case is markedly potent in spreading the disease, and infecting the milk of other animals through splashing during milking operations, as well as the clothing of the milkers and the bodies of neighbouring cows.

It was doubtless an unusual case but perhaps many such are missed, because it is not the usual procedure to rip up and examine the bowels of cattle as we do those of pigs during swine fever investigations.

I believe that many obscure positive results in the examination of milk samples might be due to the splashing of urine excreted by tuberculous kidneys or of liquid fæces from such a case as I have exhibited, for it is very possible to have these organs so affected without any evidence of udder tuberculosis.

In reference to the campaign conducted by the four chief cities in Scotland at the behest of the Department of Health, in the biological testing of a stated number of bulk samples of milk each month during 1931, I would cite an unique and puzzling experience.

Mr. Gofton, of Edinburgh, reported that a guinea-pig inoculated with a bulk sample of milk taken from the supply of a small upland herd was found to be tuberculous.

This herd comprised only seven cows in milk, it was self-supporting and we had some reason to believe it was comparatively free of tuberculosis. No clinical evidence of tuberculosis was found in any of these cows but an individual sample of milk was taken from each animal. The microscopic examination of the seven samples proved "negative" and seven guinea-pigs were inoculated. After a month it was reported that five of the guinea-pigs were tuberculous and when re-examined, the cows concerned still revealed nothing suggestive of tuberculosis of the udder. Despite the absence of any evidence of tuberculosis in the live animals, we could not fail to have cows so indicted slaughtered under the Tuberculosis Order.

After an exhaustive *post-mortem* examination of these cows we found no evidence of the disease in three cases and in the other two only minute lesions, none of which were present in the udders. Indeed, the udders were brought to the laboratory and when microscopically examined the result proved "negative."

We were left to conjecture as to how the tubercle bacilli, which infected the inoculated guinea-pigs, reached the milk samples which were tested at Hamilton and Edinburgh. However, it is remarkable that each of the five cows slaughtered showed distinct lesions of Johne's disease on *post-mortem* examination, although one would not have suspected it in the live animals. As the causal organism of Johne's disease belongs to the same group of "acid-alcohol-fast bacilli" as the bacillus of bovine tuberculosis, our findings in these cases perhaps indicate the pressing need for further research into the possibility of transmutation of members of this group of bacilli occurring under certain circumstances.

[Having dealt with other minor matters, Mr. Begg concluded by referring to several salient features in the application and interpretation of the double intradermal tuberculin test, which he regarded as more facile but no more reliable than the subcutaneous test.

Particularly, he expressed the opinion that, speaking generally, no dependence could be placed on non-reactors that were brought from infected herds, and cited several cases to show that the development of the capacity to react after exposure to infection was often longer delayed than most people were prepared to believe.]

Discussion

Lieut.-Colonel H. G. Bowes expressed the gratitude of the members to Mr. Begg for the very interesting and characteristic address he had given. In mentioning cases of anthrax seen before death, Colonel Bowes said he had never been successful in demonstrating the bacilli in blood films made before death, even when made at intervals over a period of several hours. Mr. Begg's figures as to the incidence of anthrax together with the corresponding amounts of importation of food materials to this country were interesting: food stuffs could be contaminated in many ways during transit. A simple method for estimating the calcium content of the blood would be very useful, but he did not see any prospect of this being accomplished yet. He agreed with Mr. Begg that a large percentage of the mysterious deaths in Spring might be due to hypocalcæmia.

Mr. D. S. Rabagliati said that it was to be expected that an address from Mr. Begg would be very illuminating and would produce something "different": they were very much indebted to him for giving the members a few of the fruits of his observations, which had so much practical application. Regarding anthrax, did Mr. Begg agree that bullocks as well as bulls appeared to show a greater resistance to infection than did cows? Most of the cases in which anthrax had been seen in life had been cases in the male bovine; they might survive two or three days before death supervened. He thought that the fall in the incidence of anthrax in certain districts might be due to the more efficient disinfection which was carried out now in industrial districts where there was potential anthrax infection. Mr. Rabagliati proceeded to relate one case of suspected anthrax which was dealt with as such, in which the blood films had shown the typical McFadyean reaction with Methylene Blue but no bacilli had been present. He asked Mr. Begg whether he agreed that it was much more difficult to demonstrate bacilli from the carcasses of horses and pigs. The examination of sputa was of the greatest value in detecting dangerous tuberculous cows and found cases which were difficult to detect clinically. In the case Mr. Begg had cited, where five cows in a herd of seven had shown positive on biological examination, he wondered whether this could be explained by a mistake in the laboratory, as this was known to have occurred on occasion. It seemed inexplicable, as he thought that in the majority of cases where a herd of cows was found biologically to have the bulk milk infected, it was possible by making a careful clinical examination of the herd to find the offending cow or cows.

Mr. A. H. Watson related an interesting series of cases of anthrax in which it had been claimed that bacilli had been demonstrated in the feeding cake. He encountered many cases of tetany in cattle when turned out to grass in Springtime, commonly in cows calved one or two months, and he had noticed in association that these cows showed delay or absence of œstrum. In a few cases there was a recurrence in two to three weeks and in one case the cow had been affected three times. He thought that a good deal of the trouble might be due to the small amount of lime that was applied to the land.

Replying to the discussion, Mr. Begg expressed his appreciation of the kind remarks of the gentlemen who had taken part.

Colonel Bowes had disclosed his inability to demonstrate anthrax bacilli in blood films made before death, but that was a common experience and he had often failed when making many films over a period of 24 hours before the animal had died of anthrax.

Although he thought, from experience, that bulls were more resistant to the disease, he did not mean that they had a more effective immunity, for in each of his cases of illness in bulls the animal died of the disease. He had only met with one case in a horse in 22 years and none in the pig.

He stressed the importance of proper handling and disposal of infected carcasses.

Replying to Mr. Rabagliati, he could not say that he recollected any case in a bullock that had been ill for several days, and then died of anthrax, but on more than one occasion he had put bullocks with a high temperature into isolation after a death had occurred and they remained alive.

He heartily agreed that the examination of sputa was of the greatest value in detecting dangerous tuberculous animals.

The case he had cited wherein five cows out of seven showed positive biological results could scarcely have been due to a laboratory mistake, since both the Edinburgh and the Lanarkshire laboratory were implicated. .

Considering the relatively small number of deaths reported in West Yorkshire for examination under the Anthrax Order, Mr. Begg suggested to Mr. Rabagliati the propriety of having an order equivalent to the Diseases of Animals (Lanarkshire) Order of 1907.

He was interested in Mr. A. H. Watson's very practical remarks, and was much obliged to him for them.

FOREIGN VEGETABLES AND FOOT-AND-MOUTH DISEASE

At a meeting of the Council of the Highland and Agricultural Society on June 1st considerable discussion took place regarding the introduction of cattle disease through the medium of foreign vegetables. The Council had resolved to press upon the Government the exclusion from the United Kingdom of vegetables from certain countries known to be infected with foot-and-mouth disease.

This decision was reached as a sequel to the findings of an Ulster inquiry to the effect that the County Down cattle which communicated the disease to England and Scotland last summer were infected through the medium of Dutch broccoli imported *via* Leith to the farm on which the original outbreak occurred.

The Council's resolution on the matter had been sent to the Royal Agricultural Society of England and also to the Royal Ulster Agricultural Society accompanied by an invitation to join those bodies in making representations to the English Ministry of Agriculture. The Royal Society had approved the resolution, and the Council of the Royal Ulster Society, it was intimated, would consider the matter at its meeting on June 10th. Colonel Carruthers stated that the Chairman of the Royal Society was strongly in favour of the resolution, and so also was Sir Basil Brooke of the Ulster Society. The Committee of the Council were given powers to act in conjunction with the two other bodies.

THE PATHOLOGY OF REPRODUCTION IN DOMESTIC ANIMALS*

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LECTURE No. I.

The Pathology of Reproduction in Perspective

The diseases of mammals are divisible into two great groups: ante-natal and post-natal. They blend at various points. The intrauterine individual does not become diseased and die without causing some injury to the uterus or other portion of the reproductive system of the pregnant female, but such injury may not be readily visible, clinically. Conversely the uterus or other reproductive organ may not be diseased without adversely affecting the contained young.

The mortality of intrauterine young is relatively far higher than in post-natal life. The sow produces at a given œstrum, 15 to 25 ova, most or all of which are fertilised, but upon the average not over six to ten pigs are born, the others having died within the brief space of four months. In the uniparous mare and cow, two or more services are required as a rule for each young produced, although it is fairly certain that most ova are fertilised. Intrauterine death is not the full measure of the loss from ante-natal disease. Many diseases and deformities of young and adult mammals are definitely traceable to ante-natal pathology.

The economic losses from ante-natal pathology in domestic animals are by far the greatest in dairy cattle. The ultimate object of the dairyman is the production of a profitable quantity and quality of milk; calves are a dairy by-product. The milk glands are adjuncts of the reproductive system and lactation is dependent upon the reproduction of young at frequent intervals. The dairy cow is thus asked to bear a dual load, the production of calves and of a volume of milk grossly in excess of the physiological plan.

Disease, almost wholly sexual, steps in, and many dairy herds fail to produce sufficient female progeny for replacement. The principles involved in the pathology of reproduction are alike in all animals. The variations in the incidence and destructiveness of genital disease in different species and groups of animals must be attributed to the operation of various forces, the intensity of which is modified by environment. Some of these forces are clearly recognisable, others are undetermined. If it be attempted to compare some of the important variations in environment which may modify the invasive power of disease as related to the strength of the animal to resist it, dairy cattle and sheep offer the following marked contrasts:

1. The dairy calf is grown artificially, generally upon unnatural food; the lamb is grown naturally.

2. The dairy calf is the most frequently and dangerously diseased of any young domestic animal; the lamb is very healthy.

3. The dairy heifer is commonly bred when far less mature than is the ewe lamb when first bred.

4. The dairy heifer, immediately following her first calving, is asked to assume the heavy load of commercially profitable lactation; while lactation in the ewe is limited to the needs of her young.

5. The dairy cow is often rebred at 30 days after the termination of pregnancy, usually at 60 or 70 days, while in full lactation, and required to carry the double load of pregnancy and lactation for seven to eight months; the ewe enjoys a respite of seven months in pregnancy, two or three months of which is free from the moderate lactation; she enjoys a definite rest period from both gestation and lactation.

6. Dairy cattle unquestionably suffer most severely from diseases of reproduction of any group of domestic animals; ordinary sheep are sexually the most healthy and efficient.

The significance of the foregoing contrasts will be variously interpreted by different persons. The determination of the causes of these contrasts should point the way toward improvement in reproduction. The pathology of reproduction is a highly complex problem. The factors involved are infinite; each reacts upon all the others, rendering it impossible to arrive at a safe conclusion through a close-up study of a single influence. It is necessary instead, that a study be made of as many of the forces as possible, both in detail and collectively.

Throughout the history of animal industry, interferences with reproduction have been recorded and have at times attained definite economic importance. In recent times the problem has become one of the first magnitude to animal breeders and a definite challenge to the veterinary profession.

Reproduction is a luxus function; it is not physiologically called into play until the individual has attained such a degree of maturity and strength that it may safely undertake this additional burden. That reproduction is not

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essential to the life or health of the individual, is illustrated by the neuter or freemartin calf, by the mule, and by castrated animals.

The effective study of the pathology of reproduction is peculiarly difficult. The fertilised ovum, at first microscopic, is hidden away where it cannot be observed directly in its living state. This has served to delay scientific progress and, in the absence of adequate facts, has invited dangerous conclusions and theories. Not only has it been difficult to discover the facts regarding the pathology of reproduction, but until recently the problem has been of relatively minor importance when compared with various animal plagues, the control of which commanded the best efforts of the veterinary profession.

In the same year that I entered the veterinary profession, fifty-three years ago, Professor Walley of Edinburgh published a pretentious volume entitled "The Four Bovine Scourges." He frankly admitted the existence of other odds and ends of disease, but regarded the four named as constituting all those of major importance to the cattle industry of Great Britain. Concerning the first three of his list (contagious pleuro-pneumonia, cattle plague, and foot-and-mouth disease) he takes no pains to defend his classification of them as scourges of the first magnitude. He apologises for and enters upon a lengthy defence for having designated tuberculosis as the fourth great scourge because at that time it was commanding scant attention.

In the United States rinderpest is unknown; few veterinarians have seen pleuro-pneumonia, and not very many have observed foot-and-mouth disease. There is no denial now that tuberculosis is a scourge of the first magnitude; but available evidence seems to indicate clearly that it is being repressed to a hopeful degree, and that in due time it will be eliminated, or at least reduced to a minor problem. Texas fever has caused greater losses to the cattle industry of the United States than Walley's first three scourges combined; but it seems now well on the road to elimination. Meanwhile the pathology of reproduction has forged ahead until it takes precedence in economic importance and in the difficulties of control over Texas fever and tuberculosis combined.

Genital disease is not the sole result of any one pathogenic organism or factor, nor can any approximately complete list of important causes be made at this time. Fertilised ova, embryos and small fœtuses perish from disease, in great numbers, and disappear unseen, the causes of their death commonly escaping detection. Some embryos, which become attacked by disease, partially recover ultimately to result in monsters or in other aberrations of less severe type. Some of the lesser aberrations are not wholly incompatible with life but the defects, such as umbilical and scrotal herniæ, may at any time menace the health or life of the defective animal.

The pathology of reproduction, as such, is commanding little attention in the United States. Some Continental European countries have provided extensive facilities, with well trained personnel, for a comprehensive study of the forces which interfere with reproduction, in all economically valuable domestic animals; in Germany there is a large and vigorous association of scientists engaged in this field, who meet for the discussion of their problems. Other German-speaking scientists of neighbouring states are cordially invited to attend the conventions and participate in the discussions.

Such research organisations do not exist in the United States. Instead there have been organised by federal and state bureaux of animal industry, by agricultural experiment stations, and by agricultural, and veterinary colleges, extensive equipment and ample personnel for researches upon those abortions and other phenomena in cattle attributed to *B. abortus* (Bang). More men are engaged in these researches, and more funds are being expended upon them, than ever before have been devoted to investigations upon any two diseases, in the history of veterinary science in America. This attitude of the federal and state governments is apparently based upon the hypothesis that Bang's bacillus is the central force in the pathology of reproduction in cattle, about which all other important causes revolve as satellites. In spite of the great volume of effort no clearly established discoveries have yet been made which have definitely halted, or retarded the pathology of reproduction as a whole, or of the prevalence of Bang's bacillus in particular. If all cattle, responding to an accepted test for the presence of Bang's bacillus, are removed from a herd and slaughtered, they undeniably provide no further abortion, sterility, or other pathological phenomena. Definite records are not available, however, showing that the elimination of the convicted animals has enabled the remaining cows to attain, or closely approach, the ideal rate of reproduction. The cost of such eliminations is not authentically reported, and the actual efficiency of the remaining animals is not recorded in detail, but categorically only.

The measures devised for the control of genital disease vary widely. Essentially all governments quarantine dourine and usually destroy affected animals. Most Continental European states quarantine against the vesicular venereal disease or coital exanthema; but so far as known, neither the federal nor any of the state governments of America takes official cognizance of it, although it is not rare in either horses or cattle. Some thirty states and territories of the United States quarantine against

the importation of cattle classed as affected with Bang's bacillus, but place no restrictions upon animals because of other disease of the genital organs however virulent. In Continental Europe quarantine measures against Bang's bacillus are wanting or lax.

In the United States and in other countries there are no well-established sanitary regulations for the control of Bang's bacillus within the state. In some communities, efforts are being made to eliminate cows diagnosed as harbouring Bang's bacillus, from herds supplying market milk, as a means of repressing undulant fever. This is not necessarily related to the breeding problem. Many advocate the isolation or discarding of all animals classed as harbouring Bang's bacillus. Other equally prominent individuals and organisations, perhaps equal in numbers to the foregoing, advise that all cattle in a herd, where Bang's bacillus exists, be inoculated with the live organism. The inoculation with living bacillus in herds where the existence of Bang's bacillus is not recognisable, is generally disapproved. Large herds, in which Bang's bacillus does not exist, are so extremely rare that the suggested exclusion of inoculation is not of great interest to the cattle industry, and does not materially reduce the market for vaccines.

The removal from a breeding herd of those animals seriously affected with genital disease, which cannot be economically salvaged, is in full accord with the principles of hygiene. But the removal does not benefit the removed animals, and cannot prevent the remaining animals from later developing destructive genital disease of some type. In some herds, but by no means in all, the published data show that those cows, the blood of which reacts to the test for Bang's bacillus, breed less satisfactorily than the negative cows. Even in such herds the evidence is commonly defective and incomplete. Lothe[1] has shown that in a large herd abortions were most numerous in the positive cows but a detailed study of his excellent data shows that the abortions in the positive group quite largely had occurred while the cows were yet negative; they became positive subsequent to the abortion. This raises the interesting question of whether in some cases Bang's bacillus is the basic cause of the abortion, or whether some other bacillus, virus or influence first causes important genital disease and prepares a suitable environment in which Bang's bacillus may multiply destructively. There is sufficient evidence of the latter to challenge careful study.

Bang's bacillus is apparently a pyogenic organism and is intimately associated with purulent inflammation of the placental tissue and the development of abscesses in solipeds, ruminants and swine. It is prominently associated with abortion, because of which it has been extensively studied, and has thereby become the most favourable standard for the consideration of genital diseases as a whole. It is now well known that a long list of other bacteria are frequently present in abortion, premature birth, retained afterbirth and other types of genital disease; as well as within the uterus, fœtal membranes and fœtus, in clinically physiological birth.

Bacteria do not comprise all the forms of pathogenic life associated with genital disease. It is well known that the vesicular venereal disease or genital exanthema of horses and cattle, like other diseases characterised by vesicular eruptions, is due to a filterable virus in each. How many other filterable viruses may be associated with genital diseases of domestic animals is purely speculative. One of the most profoundly destructive diseases of reproduction is dourine of horses, due to a trypanosome. Trypanosomes are common in the blood of cattle; it has been claimed by some that this parasite is the cause of the granular venereal disease or nodular vaginitis. There are important clinical evidences in support of the contention. If this be true of cattle, it should logically follow also in other ruminants and swine, in which the granular venereal disease is widely disseminated. It is therefore desirable when studying the pathology of reproduction in perspective that these three great groups of contagions: bacteria, filterable viruses and protozoa, be kept in mind, especially since it is well known that representatives of each group have an important place in these diseases.

Abortion, as well as other pathological phenomena of reproduction, such as premature birth, stillbirth, dystocia, monsters, and retained afterbirth, is by far the most prevalent in cattle. The destructiveness is not alike in all breeds but is pre-eminently most severe in dairy cattle. It is a general principle, based upon clinical experience, that when contagion invades a herd or group, some individuals fail to become diseased; they are said to be more resistant. In some maladies, especially in a large proportion of those due to filterable viruses, like foot-and-mouth disease, few exposed animals escape. In many infectious diseases only a minority contract the malady promptly; especially is this true in chronic bacterial diseases. Finally the border line of contagious disease is reached where contagion occurs chiefly, or only, in the presence of profound depression of vigour or of notable traumatic injury. Thus, according to apparently reliable authority, the organism of hæmorrhagic septicæmia is virtually universally distributed, but becomes a cause of important disease only when the animals involved are depressed greatly from other agencies. The pus-producing bacteria generally

act only in a wound, although virtually always present.

Why are dairy cattle overwhelmingly more vulnerable than range beef cattle, to invasion by Bang's bacillus, and other species of bacteria associated with abortion, and other sexual diseases? If the question is answerable there should follow logical hope for improvement in the breeding health of dairy cattle. Neither isolation nor vaccination can well change dairy cattle to the status of range beef animals. Recently I have studied closely, very severe genital disease in a dairy herd. Separated from these dairy cattle by only a wire fence, were 25,000 beef cattle, comprising about 7,500 breeding females. Neither dairy nor beef cattle are stabled, and the forage is as nearly alike as can grow upon opposite sides of a wire fence. The beef herd has existed for a century; there is no record of serious genital disease and the rate of calf production is high. Within ten years after the establishment of the dairy herd, severe genital disease had become established, without recognisable introduction from without.

In dairy herds abortion and other disease phenomena are not uniformly distributed amongst the animals. In many dairy herds, heifers furnish half or more of all abortions, premature births, dystocias, retained afterbirths and other types of genital disease. In beef cattle, females in the second pregnancy commonly suffer most. Why this contrast? I will attempt to answer this question later.

It is frequently claimed that dairy heifers suffer so severely because they have not yet become immune to the bacteria causing the disease. The fact that the heifer aborts conclusively proves her vulnerability, but does not explain why the range beef heifer, on the other side of the wire fence, does not abort. Hence an experimenter may show that he can reliably "cause" abortion, by inoculating the heifers on one side of the fence with Bang's bacillus; while another experimenter may prove conclusively that he can "prevent" abortion by applying the same measure to the heifers on the opposite side of the fence—but they need to be careful not to get the two groups transposed. Once a heifer has aborted, tradition has it that she is thereafter immune. Clinical observation flatly denies the tradition. Sterility is extremely common in those heifers which abort in first pregnancy or suffer from dystocia, retained afterbirth or other equally important type of sexual disease. Among those which again become pregnant, a far higher ratio have a pathological termination of gestation than is the case among those heifers in which the first pregnancy terminated physiologically.

A dairy cow which has passed through her first two pregnancies physiologically, usually breeds well up to ten to twelve years of age, after which the abortion-sterility-retained-afterbirth ratio advances rapidly and closely approaches that in heifers in first pregnancy. Such cows are exceptionally healthy, until old age lowers their vigour and renders them less able to bear the load of reproduction and lactation. Disease is then more destructive in them than in heifers in first pregnancy. The young heifer, which aborts, is moving upward, toward higher maturity and strength, and if not too badly injured, may improve sufficiently to breed acceptably for a time; but when the aged cow falters, and goes down, the outlook for the resumption of acceptable breeding is well-nigh hopeless. She does not become "immune" and go on breeding for another decade. A few cows breed splendidly up to 20 to 25 years; but not because they had aborted as heifers and became immune to sexual disease.

Results, which appear contradictory, are also observed in experiments with abortion. I injected 10 c.c. of an emulsion of living Bang bacilli into the jugular veins of each of six pregnant heifers. One died from tuberculosis. After allowing the remaining five an abundance of time to abort, which they obstinately refused to do, they were killed, and a careful search of their uteri and contained fœtuses failed to reveal any trace, past or present, of the bacillus. Two colleagues at approximately the same time conducted a parallel experiment upon five cows; all promptly aborted and the aborts contained Bang's bacillus. The cultures were made in the same laboratory, by the same man, and I made the injections in all, with the same syringe. My heifers were about one-half the weight of the cows used by my colleagues; so that the heifers had double the volume of culture per unit of body weight.

According to tradition and current theory, the heifers should have been highly susceptible and the cows immune. Inquiry showed that genital disease had raged the preceding year in the herd from which the cows came; and that only one of the five had produced a calf. This, according to theory, should have rendered the cows highly immune. My heifers were nondescripts, obtained from a local cattle trader with the characteristic absence of history in such cases. No two experiments could be more contradictory. An authentic explanation would be highly valuable. No evidence was obtained which showed, or tended to show, that the bacilli injected into the cows did not play an important part in causing the abortions. Perhaps had I multiplied the dose of bacilli to the heifers ten to twenty times they also would have aborted. It was clearly shown that the injection into the jugular of 10 c.c. of an emulsion of Bang's bacilli, of the degree of virulence used, does not cause such heifers to abort. One critic dismissed the evidence with the remark

that I had " used exactly five heifers." I admit that there were to the best of my knowledge exactly five heifers, not 4·3 nor 4·9. I have never advocated the use of fractions of heifers in scientific experiments.

Subsequent to the date of the above experiments, some colleagues and I[2] authentically showed that abortion is regularly the consequence of utero-chorionic lesions. The damage to the endometrium persists throughout the life of the animal. My critic, who charged me with having used exactly five heifers, might have added, with due fairness, that my colleagues did not use " exactly " five cows; but used instead five remnants of cows, the extent of each remnant being unknown. Each of the cows had lost an undetermined part of the placental tissues of her uterus, which had left the organ decreased in area and depressed in vigour. The conclusion is justifiable, if not inescapable, that without having known it, I had purchased five heifers, which were so healthy that they ignored the introduction of the bacilli into their veins; while my colleagues, equally uninformed, purchased five cows which were too far from healthy to withstand the force of the inoculation to which they were exposed.

That is not the whole story. Some prominent investigators have stated, recently, that in the control of Bang's disease a wire fence constitutes an effective barrier. There was a fence in this case but both groups were on the same side of it. The heifers having proved invulnerable to the injections of Bang bacilli into their jugulars, offered no menace to the cows—they did not have Bang's disease. The cows aborted in the pasture and the heifers became luxuriantly exposed naturally. For all that, the heifers went serenely along. Various theories may be advanced to evade or obscure the observations. An authentic explanation of the basic cause of this remarkable difference in susceptibility is worth inexpressibly more than volumes of theory. The important problem is to discover the nature of the resistance exhibited by the five heifers, and the means by which such resistance may be obtained and perpetuated.

Few proposed remedies have been more widely used for the control of animal disease than the inoculation of dairy cattle with living Bang bacilli. Its advocates have maintained, stoutly, that when used as a preventive, the injection does not cause disease. A considerable ratio of heifers and cows are like the five heifers described above and ignore both artificial and natural exposure. The resistance of such cattle has probably saved the dairy industry from appalling losses.

Bang's bacillus (and presumably most other bacteria and viruses) invading the uterus does not limit its invasions to cattle, but is recognisable in numerous species of mammals and birds. Its exact range of dissemination is undetermined. It does not show a predilection for the reproductive organs in all species. The phenomenon of abortion was mistaken for a disease and out of the error grew the terms " contagious abortion " and " abortion disease." Thus abortion came to be regarded as a female disease. It was found, however, that Bang's bacillus, so frequently associated with abortion in cattle, invades both males and females. In cattle of breeding age, the bacillus is recognised far more frequently in the female. There are many more females than males in breeding. In other species of animals Bang's bacillus is recognised as frequently in males as in females; while in man the incidence of undulant fever is thrice as great in men as in women. In cattle a great majority of the aborted fœtuses are males. Pathogenic bacteria are quite often difficult, or impossible, of recognition, until disease has become established and the bacilli have become concentrated in the diseased area and have multiplied enormously.

In man, Bang's bacillus is associated prominently, not with genital disease, but with a bacteræmia known as undulant fever, with a highly interesting variation in incidence, according to age and sex. In the contribution by Zeller,[3] amongst 617 cases diagnosed and the sex recorded, 69·7 per cent. were males and 30·3 per cent. females. The incidence of undulant fever, according to sex, is apparently the reverse of the diagnosed presence of Bang's bacillus in cattle. Bacteræmia due to Bang's bacillus is not known to occur in cattle during post-natal life; but aborted fœtuses, with which the Bang organism is associated, commonly show signs of having suffered from bacteræmia. The same is true, however, of aborted bovine fœtuses in which the presence of Bang's bacillus is not recognisable. The contribution of Hart and Carpenter,[4] in whose experiments the inoculated heifers developed inoculation abscesses and severe emaciation, suggests bacteræmia. It is commonly held that Bang's bacillus is transported by the blood stream of cattle from the alimentary tract, after ingestion, to the pregnant uterus; as well as from the mammary gland to the uterus, without causing a bacteræmia.

Bang's bacillus is common in cow's milk and virtually all occidental people consume milk or its derivatives. Children doubtless drink more milk than other persons, but they rarely contract undulant fever. According to the data of Zeller[3] the rate of undulant fever per million children from four to nine years of age was 7·9 for males and 1·3 for females, and from 10 to 14 it was 5·7 for males to 2·1 for females. With the advent of puberty, the incidence suddenly advanced between 15 and 19 years to 16·9

for males and 6·8 for females. Between the ages of 20 and 29 the incidence doubles for both sexes and reaches its climax in men from 30 to 39 and in women, during the decennium, including the menopause, from 40 to 49. The incidence then drops rapidly for both sexes and from 60 to 74 is about the same as in childhood. Many regard the use of milk containing Bang's bacillus as the fundamental cause of undulant fever, but the data indicate, quite clearly, that other factors, not yet determined, play a highly important rôle in the incidence of the disease.

In the horse Bang's bacillus is recognised almost exclusively in fistulous withers and poll-evil. This disease, bearing a dual name according to location, apparently is confined to the horse. I have not observed it in the mule; though perhaps it occurs in that animal. Sex is not known to play any part in the incidence of poll-evil and fistulous withers; it occurs, so far as known, with like frequency in mares and geldings. The disease is rare in young horses; I have not observed it at less than two years of age. Some influential writers hold that in those cases where Bang's bacillus is present in the abscess it is thereby proved that the bacillus is the cause of the disease. Such writers do not make it clear what it is, in fistulous withers, that they designate as the " disease." If they mean by the " disease " the basic lesions, which culminate in some cases in suppuration, they are in irreconcilable conflict with clinical observations and well-established pathological studies. Those cases of fistulous withers and poll-evil in which Bang's bacillus is not recognisable—and they constitute the majority—cannot be differentiated, clinically, from those in which it is present. According to Pillers,[5] Bovette in 1861 recognised a small nematode worm as the cause of fistulous withers. Since that time numerous writers in England, France, Australia, America and other countries have recorded similar findings. So far as investigations have led, the order in the development of the disease is: (1) the invasion of the ligamentum nuchæ by a small thread worm; (2) calcification of the ligament as a result of the irritation of the worm; (3) abscessation. Worms are not pus producers; but when the tissues have undergone injury, the invasion by bacteria is invited. Bang's bacillus is one of an unknown number capable of causing suppuration. It then depends upon the angle of view whether the worm, the calcification or the suppuration, is the disease or cause of the disease. There is good logic in holding that the worm is the primary cause, the calcification the secondary, and the invading bacteria the tertiary.

Following this thought farther, a study of the outstanding contribution of Lothe[1] shows, in harmony with current belief, that the ratio of abortion was definitely higher in the positive, than in the negative cows. At the same time it was clearly shown that the abortions recorded in the positive group, generally occurred while the cow was yet negative, or before the first test was made, so that it could not be determined whether the aborters had been positive or negative at the time. In the data the phenomenon of abortion was used as the essential standard for computation; it was not made clear that in some cases other phenomena of genital disease had not been present prior to the abortion. The data of Lothe justify the suspicion that in some of his animals, as in fistulous withers of horses, the Bang bacillus may have played a secondary rôle.

Laboratory workers in connection with Bang's bacillus regularly fail to record the sexual history of the experiment animals. They are secured, largely, by purchase and without available history. Commonly the inquiry as to genital health is limited to the agglutination test for the one bacterium. If a heifer was in bad or indifferent health as a calf, the fact is not revealed, or if a heifer required a number of copulations for the establishment of recognisable pregnancy, it is not viewed as of vital importance. The general statement is made, without the submission of important evidence, that Bang's bacillus is the chief, basic cause of sterility in cattle; but in Lothe's contribution it is recorded that 17 heifers, an unusually large number for the size of the herd, were discarded because of sterility. Apparently all these were negative.

It is commonly held that abortions, in dairy cattle during early gestation, usually are not due to Bang's bacillus. The question naturally arises whether intrauterine disease in early pregnancy not associated with Bang's bacillus may not pave the way for later invasion by that organism, in a manner comparable to the nematode worm in fistulous withers. Conklin[6] and others have found that, as gestation advances, the chemical reactions within the uterus gradually approach the optimum for the growth of Bang's bacillus; apparently owing to a decreasing oxygen supply. Cesari[7] in an outstanding contribution, makes the significant statement that after abortion has prevailed in a herd of goats for a period of time, Bang's bacillus appears. In the ambulatory clinic of the New York State Veterinary College, Udall has observed herds of dairy cattle in which abortion and other genital diseases were severe in the absence of Bang's bacillus; but after the lapse of one to three years that organism became recognisable. Thus evidence arises, here and there, which justifies careful study of the possibility that Bang's bacillus is sometimes a secondary invader.

The foregoing discussion is not designed to add to or to detract from the importance of Bang's bacillus. The Bang organism has received far more study than has any other associated with the pathology of reproduction, and therefore constitutes the best standard for measuring the causes of genital disease in terms of infection. Its importance as a pathogenic organism is not denied.

In all contagious diseases two factors are directly opposed—the attacking force of the contagion and the defensive power of the individual. If the former prevails, disease follows; if the latter is supreme, health continues. The two factors vary widely in comparative strength. The vesicular venereal disease or coital exanthema of horses and cattle is each amongst the most highly contagious and most acute of transmissible diseases of domestic animals. The acuteness and contagiousness are in general accord with that of other contagions characterised by vesicular eruptions and caused by filterable viruses. Most infections of the genital organs of domestic animals are chronic in character and spread slowly. In my experience with dourine in the first recognised outbreak in America, the ratio of mares infected by badly diseased stallions was low.

Most contagions thus far recognised, as associated with genital pathology, possess comparatively feeble power of invasion, when opposed by highly vigorous individuals; such as the five heifers cited in the foregoing which ignored the injections of large doses of Bang's bacillus into the jugular veins, and to which was added also severe natural exposure from five aborting cows. My aim is to bring out, in bold relief, the indescribable confusion commonly existing in the pathology of reproduction. The causes for such vacillations, as have been cited, have been neither determined nor seriously studied. Bang's bacillus, in common with other contagions associated with the pathology of reproduction—sterility, abortion, dystocia, monsters, premature birth and prolonged gestation, retained afterbirth—all are governed alike by fixed laws. The need of to-day is to learn and comprehend those laws. A prominent worker with Bang's bacillus recently stated that it is an outlaw among contagions and does not conform to the basic principles governing transmissible diseases. He cited as evidence the occurrence of "sporadic" cases of Bang's disease, apparently meaning that scattered cases arose without the introduction of the bacillus from outside and did not tend to transmit the disease to contact animals.

Few conceptions of disease can be more dangerous than that any form of pathogenic infection exists which does not conform to well-established principles of pathology. The contention that a disease is an outlaw constitutes abject surrender of both pathologist and clinician. When a disease scorns the laws of pathology, then prevention, amelioration or cure become impossible. Pathology is just as obedient to natural laws as is physiology. The road to success in having health prevail over disease lies in an adequate understanding of each; not in the chance finding of a magical wand, the waving of which will transmute disease into health. When the laws of health are understood, and not until then, may the clinician hope to wage a victorious battle against disease. Wonderful cures for abortion, sterility and other pathological phenomena of reproduction have been concocted and sold to an eager public, and in the meantime genital disease flourishes. Past experiences in this field should teach veterinarians caution and modesty in their promises to clients. The clinician ever should bear in mind the far too optimistic predictions of Professor Bang when, under the exhilaration of his important discovery, he declared that the cause of abortion having been discovered it could be controlled, if not by artificial immunisation, at least by quarantine; since that prophecy was made, genital pathology has advanced more rapidly than during any preceding period of equal duration in the history of veterinary medicine.

The discovery of the biological cause of a disease does not necessarily lead to its cure or control. The first micro-organism to become identified as the cause of a contagious disease was the bacillus of anthrax, and anthrax is not yet under highly satisfactory control. Smallpox was the first great contagion to be brought under effective control and its cause remains unknown. The value of the recognition of the biologic cause of a contagious disease is not questioned, but it does not always solve the problem of its control; sometimes it has not even helped materially to solve it.

Artificial immunisation has not yet indisputably eliminated, controlled or ameliorated a single chronic, infectious disease. The efficacy of artificial immunisation against "contagious abortion" in cattle always has been controversial, although its application has been practised for more than a decade upon an enormous number of animals.

The faith of Bang and others in quarantine measures for the control of contagious diseases should be accepted cautiously, with important reservations. Intra-herd, intra-communal or intra-state quarantine has rarely subdued an important contagious disease of domestic animals. Tuberculosis in cattle has been eliminated from a few herds by isolation, where managed by persons of high intelligence and of infinite patience and courage; but as a community plan it has been unavoidably repudiated. Leprosy is apparently an ideal disease for

efficient control by quarantine and was the first disease of history to be so attacked. It has now been fought by quarantine for 20 centuries and it is fairly safe to say that it is as common now in the tropics as it was in Palestine in the first century of the Christian era.

When all cattle positive to the agglutination test for Bang's bacillus are removed from a herd, the process commonly eliminates a variable number of animals suffering severely from genital disease. With them go some positive cows which are pre-eminently healthy as measured by breeding and lactation; not rarely the best breeders and milkers in the herd are positive. The process will leave in the herd animals which are negative to the Bang test but are hopelessly affected with genital disease associated with a bacterium quite as dangerous, so far as is known, as is Bang's bacillus. The negative and healthy cattle remaining in the herd will have been abundantly exposed and have remained healthy because of their intrinsic powers of defence; for that reason they will perhaps continue negative and healthy until their power of resistance is destroyed by the introduction of new forces—a diseased sire, overbreeding, food shortage, etc.

The United States Bureau of Animal Industry has rendered incalculable service to the nation by inter-national quarantine against such scourges as rinderpest, contagious pleuro-pneumonia, and foot-and-mouth disease. It has received great aid in this through oceanic frontiers. Nevertheless foot-and-mouth disease has occasionally evaded the quarantine and will presumably do so again. When it does slip in it is not eradicated by quarantine but by swift slaughter. True, for a brief time, the invaded area is placed under rigid quarantine until the slaughter is completed. Quarantine is a valuable agent when applied in the right place and in a proper manner. In the experiments already cited in which I inoculated five heifers and colleagues five cows with Bang's bacilli it would have been puerile to have quarantined the five cows in order to protect the heifers, because they had ample intrinsic powers of defence; it would have been a profound error, if not downright charlatanism to have quarantined the heifers in order to protect the already diseased cows. The heifers carried absolutely no peril for the cows and no known agency could possibly have repaired the damages suffered by the cows during the previous year. Quarantine is without scientific value unless the quarantined animal carries some important contagion which may menace the health of the individual it is sought to protect.

Veterinarians have great need to tread cautiously in the field of the pathology of reproduction. There is urgent need for profound and extensive clinical observation. An important, if not the most important, fact to be determined is the character of the forces which supplied the five heifers, cited as examples, with an intrinsic power of defence which rendered them invulnerable alike to heavy artificial and natural exposure to Bang's bacillus. The same problem in principle faces the clinician at every step in the whole subject of genital disease. If the clinician can learn how the intrinsic defensive powers may be built up and blended with the pedigree, the need for quarantine, artificial immunisation and medicinal remedies will probably largely vanish. Where there has been failure to produce such powers of resistance, the amelioration or cure of the disease may be undertaken far more intelligently.

In the succeeding addresses, clinical observations and studies will be presented in an effort to illustrate some of the basic principles by means of which the natural defences against genital disease may be built up and maintained. It will be held that the building up and perpetuating of such intrinsic defences should be the primary consideration of the clinician, and that it is not until this has failed that artificial protection or cure requires attention.

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AVIAN TUBERCULOSIS ERADICATION IN U.S.A.

A summary of progress in eradicating tuberculosis from poultry is now being issued monthly by the bureau of animal industry, U.S. department of agriculture. The summary includes the results of inspection of poultry flocks in the 11 states doing systematic work in detecting and eradicating tuberculosis of poultry. These states are Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, Ohio, South Dakota, and Wisconsin. In addition there are reports for 10 other states in which veterinarians engaged in testing cattle for the disease also inspected poultry. The report includes the tabulated results of *post-mortem* examinations of flocks and fowls affected with tuberculosis, as shown by clinical examination or the tuberculin test. The summary for February shows 8,695 flocks under supervision for the eradication of avian tuberculosis.

The Veterinary Record
June 25th, 1932.

ANNUAL GENERAL MEETING R.C.V.S.

THE veterinary profession, though comparatively young, nevertheless may be said to be getting on in years. Its eighty-ninth birthday was held on Thursday, June 2nd. As is usual, there were few attendances outside Members of Council. It is obviously very difficult for the busy practitioner from distant parts to attend the one general meeting of the year, but it may be taken that paucity of attendance is certain indication of the confidence the practitioner has in his Council to watch over professional interest and to maintain healthy progress in a science which is becoming year by year of greater public importance.

The outstanding feature of the meeting was the reference to the new or Supplemental Charter under which the Council's powers will be extended to level up system of administration and to remove matters which in past years have been a handicap to the Council's undertakings.

Amongst the provisions of the new Charter it is satisfactory to note that the Fellowship Diploma of the College may be conferred annually on two members, who, within a period of not less than twenty years, have served their profession with distinction and honour.

There having been no alteration in the examination fees during the past forty years, and the cost to the College of examination expenses having gone up, it seems right that provision should be made by bye-laws to make the necessary adjustments and particularly in view of the five years' curriculum of training coming into force in October next.

The increase in the number of Members of Council from 32 to 36 to provide for the inclusion of the four representatives of the Irish Free State, following on the Agreement with that State, is certainly conducive to more complete professional government and unity.

The fifth item on the new Charter, *viz.*, the power to institute post-graduate Diplomas in tropical veterinary medicine, may be regarded as a necessary corollary to the activities and pronouncements of the Lovat Committee set up a few years ago, and will prove an acquisition to those desirous of taking up Colonial appointments.

An analysis of the figures of the Register and the number of students presenting themselves for examination shows that the law of demand and supply in the personnel of the profession is being satisfactorily maintained. The fact that 488 students came up for examination in 1931 as against 356 in 1930 is indicative of a healthy professional state, and it is anticipated that at least 400 students will submit themselves for examination in July next. If the percentages of passes in certain subjects of the curriculum could be made to show increase in accordance with teaching, and the adaptability of the student, there need be no concern for the quality of the veterinary practitioner of the future. At all events, the extension of the curriculum to five years will prove a boon to professional attainment, as under present circumstances it is difficult to bring within the gamut of a four years' course all the comprehensive material which goes towards the make-up of a veterinary surgeon.

It is also refreshing to note, from the Proceedings of the Annual General Meeting, that the Balance Sheet of the Royal College of Veterinary Surgeons is in a very much more healthy condition than formerly. The donation of £1,000 in 5 per cent. War Stock from the British International Congress to the Library is a welcome benefit to an already deserving institution.

ARTIFICIAL MOULTING AS A SUBSTITUTE FOR SHEEP SHEARING

In a message to his paper the Riga correspondent of *The Times* states that the Soviet Commissariat of Light Industry reports that the fleeces of sheep and the fur of rabbits in Russia are now being gathered four times a year. A new method of "artificial moulting" is said to have made shearing obsolete.

"In this process the sheep are given a small dose of a preparation of heavy mineral salts, which so acts upon the sympathetic nerve-system that in a few days the fleeces of sheep are "loosened," and may be peeled off. No wool is left on the sheep's body, which is described as being smooth and shiny as a man's bald head after the completion of the process. A new fleece begins to grow immediately, and its rate of growth is more rapid than after shearing.

"Professor N. A. Ilyin, who is responsible for this new method, claims that he can make a sheep moult in two stages; first the finest parts of its fleece, and then that of coarser texture. Thus, even the roughest sheep may be made to yield some fine wool, which is sorted as it is peeled. In the same way fine rabbit-down is sorted from the coarser fur. The system is also to be applied to the coats of dogs."

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An Aberdeen auctioneer recalls a sale in the Autumn of 1920 when over 12,000 sheep of all classes—ewes, gimmers, and lambs—averaged £6 13s. 8d. a head. Times have changed since then, and so have sheep values.

ROYAL COLLEGE OF VETERINARY SURGEONS

ANNUAL GENERAL MEETING

The Eighty-ninth Annual General Meeting of the Royal College was held at 10, Red Lion Square, London, W.C., on Thursday, June 2nd, 1932, with Mr. G. P. Male, President, in the chair.

There were present the following members of Council:—Professor J. B. Buxton, Captain J. C. Coleman, Major G. W. Dunkin, Messrs. J. Holroyd, G. H. Livesey, G. H. Locke, Sir John M'Fadyean, Mr. J. W. McIntosh, Professor J. Macqueen, Dr. A. L. Sheather, Lieut.-Colonel P. J. Simpson, Colonel G. K. Walker, Mr. J. Willett, Professor G. H. Wooldridge, Captain W. G. Wragg. There were also present Major Gooch, Mr. A. Spicer and Mr. C. N. Jones.

The Secretary read the notice convening the meeting, as it appeared in the *London Gazette* of May 6th, 1932.

Apologies for absence were received from the following:—Major J. Abson, Dr. O. Charnock Bradley, Lieut.-Colonel J. W. Brittlebank, Professor S. H. Gaiger, Principal F. T. G. Hobday, Messrs. R. Hughes, W. Nairn, Major D. S. Rabagliati, Captain R. Simpson, Mr. T. F. Spencer, Major A. Spreull and Dr. A. W. Whitehouse.

The minutes of the previous Annual General Meeting were read, and having been duly approved were signed as correct.

Election of Council

The Secretary read the Auditors' Report as follows:—

ANNUAL ELECTION OF COUNCIL

"*May 27th*, 1932.

We certify that we have checked the voting papers sent in for the Annual Election of nine members of the Council of the Royal College of Veterinary Surgeons, and the number of votes obtained by the ten members nominated for the vacancies are set out below against their respective names:—

Name.	*Votes.*
M'Fadyean, Sir J.	746
Wooldridge, G. H.	720
Sheather, A. L.	697
Buxton, J. B.	685
Locke, G. H.	672
Share-Jones, J.	664
Willett, J.	617
Mitchell, T. M.	523
Kirk, W. H.	487
Glover, R. E.	406

(*Signed*) Woodhouse and Wilkinson."

The President: You have heard the Auditors' Report. I have much pleasure in declaring the nine gentlemen whose names appear first on the list to have been elected on the Council of the Royal College, the ninth member being elected in place of Professor Craig, whose term of office would have expired in 1935.

Annual Report and Financial Statement

The President: In presenting the Annual Report on behalf of the Council, I should like to say that it is only a brief summary of the work which has been accomplished during the year. The first part of the Report is mainly statistical. I may perhaps draw your attention to the fact that the number of students examined has increased from 356 in 1930 to 488 in 1931. It is expected that a still larger number will present themselves for examination during the present year. That is a good sign, for the number of new graduates has for several years been below the number of deaths recorded. It is interesting to compare the number of members during the last 20 years. In 1912 there were 3,419 members and 226 existing practitioners, making a total of 3,645. In 1932 there were 26 less members; that is to say, there were 3,393 members, and the existing practitioners had been reduced to 36, so that the total number for the present year of registered practitioners was 3,429—that is, 216 less than in 1912.

The agreement with the Irish Free State has now been confirmed by Act of Parliament, and I am happy to be able to announce that as a result of the election held in the Free State the following members have been elected to represent that Dominion on the Council of the College, namely, Professor J. F. Craig for a term of four years, Mr. P. F. Dolan for a term of three years, Mr. A. A. Donnelly for a term of two years and Mr. J. Dodd for a term of one year. So that one new member will be elected each year. We shall be very pleased to welcome these additions to our numbers, and we look forward to their help and counsel.

The Supplemental Charter referred to on page 4 of the Annual Report has now been approved by His Majesty the King in Council, and the sealed copy has been delivered. The new Charter makes the following provisions:—

(1) That the number of members of the Council shall be increased to 36 to include four representatives of the Irish Free State, to be elected by the votes of members of the College resident in that Dominion.

(2) That the fees chargeable for admission to membership of the Royal College of Veterinary Surgeons, including the fees for examination, shall be such sum as the Council may from time to time determine by bye-law.

(3) That the fees for registration of names in the Register of Colonial and foreign practitioners shall be such as the Council shall from time to time determine by bye-law, the maximum amount not to exceed that charged for ordinary membership.

(4) That the Council may admit annually to the Fellowship of the College without examination

not more than two members of distinction of not less than 20 years' standing, the fee chargeable on such election not to exceed 10 guineas.

(5) That the Council shall have the power to institute post-graduate diplomas in tropical veterinary medicine and in such other branches of veterinary science as may from time to time be found expedient.

Those are the chief provisions of the new Charter.

The Council has nearly completed the framing of the curriculum for the Five Years' Course which comes into operation in October next, and the syllabus is shown on page 5 of the Report.

The work of the Registration Committee referred to on pages 5 and 6 is one of the most important and difficult branches of the work of the Council. The task of its members, however, is lightened by the assurance that their work in maintaining a high standard of professional etiquette has the cordial approval of the profession as a whole.

The Library continues to render increased service to members, the number of volumes borrowed being greatly in excess of that recorded in former years. I am glad to say that many cordial expressions of appreciation have been received from members who have made use of the literature rendered available by the Library.

The rest of the Report refers to finance, and if any member present desires to ask any questions on that, the Treasurer will be prepared to answer them.

We will now take the Report page by page.

On the first page you will see the record of the election of members of Council for last year, and the list of officers. You will note that Major Abson wished to be relieved of his duties as Hon. Treasurer, and Colonel Simpson has kindly taken on the post. We all very much regret that Major Abson felt he had to give it up. He has done extremely good service for the Royal College.

Are there any questions on page 2? You will see that Bye-laws 62 and 77 have been amended to bring them into line with other universities.

Is there any question on pages 3 and 4? I might say that the Agricultural Research Council has been sitting, and that the veterinary profession is represented on the Animal Diseases Committee. With regard to the Veterinary Advisory Officers, it is hoped that the new rules will be beneficial to those officers, and will also regularise their relations with members of the profession.

On page 5 you have the new suggested curriculum, which has entailed a very great deal of work, especially on the Chairman of the Committee.

Then we come to the Registration Committee. Are there any remarks on that?

On page 7 you will see the number of members of the Royal College, and the Report of the Library and Publication Committee. You will see that the Library has benefited by a donation of £1,000 in 5 per cent. War Loan from the British International Congress. It was badly needed, and it will be a great help to the Library. Also there have been two bequests, one from Mr. A. J. Sewell and the other from Mr. W. R. McKinna.

Then there is the Finance and General Purposes Committee, and on pages 8 and 9 is the obituary list.

From pages 10 to 15 there are the accounts set out in detail, and the Treasurer will be very pleased to answer any questions.

Major Gooch: There is one feature at the bottom of page 11—"Balance, being Excess of Income over Expenditure £1,494" as against £251 last year—which is an enormous increase. I should like to know how the Treasurer has been able to do it—whether by a reduction in expenditure, or how.

Colonel Simpson: The happy position to which Major Gooch refers is due to our receiving the "annual fees" from the Irish Free State members, which have been held in abeyance until the time of the ratification of the agreement between this country and the Irish Free State Government. At the same time the Council has tried to reduce expenditure. There has been a reduction in expenditure, and there has been this receipt of fees from the Irish Free State; there has also been a rather larger increase in the amount received from examination fees.

The President: The Balance Sheet is certainly in a very much more healthy condition, thanks to those fees. Are there any other questions? If not, I will move the adoption of the Report.

Major Gooch seconded the motion, which was carried unanimously.

Presentation

The Secretary: The next item is the presentation of the Walley Memorial Prize, the successful candidate being Mr. C. N. Jones, a student of the Veterinary School of the University of Liverpool.

The President: Mr. Jones, I have very much pleasure, on behalf of the Royal College, in handing you the certificate and congratulating you on your success.

Mr. Jones made suitable acknowledgment.

The President: That concludes the business of the Annual General Meeting.

Professor Buxton moved a hearty vote of thanks to the President for his conduct in the chair, this being carried with acclamation.

The President, acknowledging the compliment, observed that it had been a great pleasure to preside over such a peaceful meeting. He was only sorry that more members of the profession were not there to participate in it.

Clinical Communications

UTERINE VALISE*

A DEVICE FOR REDUCING AND REPLACING AN EVERTED UTERUS

F. C. SCOTT, F.R.C.V.S.
Pontefract

The principle is that of placing a cylinder around the irregular mass, compressing it to a smaller cylinder which will pass through the vulva into the vagina, where the cylinder then collapses.

The cylinder is held firm in its length by canes or lathes; straps are used to constrict the girth of the mass. This arrangement prevents bellying.

METHOD OF REDUCTION

So long as the hinder parts of the cow are not pointing in a downward direction, reduction and replacement may be attempted in the position in which the cow is found.

The organ is washed, gross pieces of afterbirth broken away, and the whole enveloped in a towel, the end of which should make a complete wrap over the base; the valise is then placed underneath and the straps strapped up. One proceeds by tightening the straps in turn and tucking in the flap. Soon the straps may be transferred to the second row, when a further reduction in girth can be brought about. When sufficient reduction has been obtained replacement may commence.

REPLACEMENT

The base of the organ and the protruding canes are placed against one's body, which is used to exert the necessary pressure required to replace—the hands are free to draw out the vulva over the returning cylinder. Very soon the first strap disappears, when slight withdrawal permits of it being discarded, which accomplished, a large amount more of the eversion returns within the vulva. The canes should now be withdrawn about six inches; the compression and friction in the sheaths will prevent them returning when further pressure is exerted. On pressing further the second strap disappears, when discarding of same is similar to the first. One continues until the third strap is about to disappear, when the closed fist is placed inside the base of the valise; when one has control the third strap is released and one finds the uterus is all within the vulva. The organ is held here whilst the valise is gradually drawn out, which being accomplished, forward pressure of the fist sends the uterus back into position. The towel is brought away on withdrawing the hand.

ADVANTAGES OF THE METHOD

Instead of the old haphazard, hazardous and uncertain way, this is one of mechanical precision.
There is no hæmorrhage.
There is no mutilation of the womb.
Good conditions of cleanliness can be observed.
There is a minimum of fatigue for the cow, which renders the mortality negligible or *nil*.
There is little personal fatigue for the operator.
The time occupied is only a fraction of that taken by the old method.

* * * * *

THE REMOVAL OF AN OBSTRUCTION IN THE ŒSOPHAGUS OF THE HORSE*

S. JAMIESON,
Glasgow Veterinary College

Subject.—The patient was a brown Clydesdale gelding, two years of age and in a very low physical condition. Four days previous to our seeing the animal it had been found in the field by the owner, with its head hanging and its neck extended. Food was observed to be flowing from its nostils and a white, frothy saliva to be dripping from its mouth. That night the owner had sought veterinary aid which resulted in the diagnosis of an obstruction in the cervical portion of the œsophagus. The forthcoming aid took the form of subcutaneous injections of arecoline hydrobromide, which, unfortunately, had no other effect than violently to purge the animal. The probang was equally ineffectual.

The above treatment was continued daily until the above date, when our advice was sought.

Diagnosis.—On examination an obstruction could be felt extending as far back as about three to four inches from the angle of the mandible. On digital examination *per os* a mass was felt at the rim of the pharyngeal opening of the œsophagus, which gave the impression of being composed of pieces of wood, fibre, etc., although palpation through the skin suggested the contrary.

Method of Removal.—The patient was backed into a corner of a stall. Ropes were now passed from the back of the stall round and between forelegs to prevent forward movement. The ends of these ropes were held by assistants so that they could be slackened when it proved necessary, as was once or twice the case. A large door was now placed under the fore feet of the animal, having in its centre a ring fastened by a bolt. The horse was arranged so that the ring was directly beneath the muzzle of the patient. Two strong rope halters were then put

*Presented at meetings of the North Midland Division N.V.M.A. (reported in *Veterinary Record*, June 18th) and of the Yorkshire Division, N.V.M.A. (reported in this issue).

*Case in series presented for award under the N.V.M.A. Clinical Prize Scheme for Students, 1931.

on, and the ends of the ropes passed through the ring. A gag of the Hausmann and Dunn pattern was now fixed on the gelding and opened. The head was pulled down by means of the halter ropes until about one foot from the floor, or rather the door. The operator then lay down on the floor and passed his hand, containing the end of the stomach tube, into the œsophagus until it reached the obstruction and could go no further. The tube was kept in place by its being held against the hard palate. In this position water was now pumped in with as much force as possible; the reflex flowing through the nostrils down to the floor without danger in the form of any water reaching the lungs. After the first few strokes of the pump there could be seen numerous particles of wood, grass and twigs passing down with the reflex water. In about ten minutes the stomach tube could be passed freely down the œsophagus.

Remarks.—A fortnight later the same method had to be resorted to and it was suspected that the mucous membrane of the œsophagus might have become abraded from the first obstruction resulting in a contraction at that part. Fibrolysin was introduced and no further obstruction has taken place.

. . . . .

A MENINGEAL ABSCESS IN A RAM*

S. JAMIESON,
Glasgow Veterinary College

Subject.—The patient was a Blackface shearling ram. For about a fortnight previous to the above date the animal had shown a tendency to walk in circles and to stagger in its gait, or (to quote the shepherd) was "just like a baste with the 'rounders.'"

Symptoms.—On examination the ram exhibited a great propensity to walk in circles with his head held towards the right hand side. He was most certainly uncertain in his gait. The right eye exhibited a distinctly weak reflex action to objects held near it. When digital pressure was applied over the region of the parietal base about one centimetre from the middle of the left parietal termination of the temporal crest, the patient exhibited signs of pain.

Diagnosis.—In accordance with the symptoms, a diagnosis of "sturdy" was arrived at and operative treatment suggested.

Modus Operandi.—The site of the operation, *i.e.*, an area about one and a half square inches situated over the parietal area just behind the left horn, was clipped and cleansed. The area was now subjected to a subcutaneous injection of Chlorocain and the animal cast upon its right side. A V-shaped incision was now made, the arms of the V being about two to three cms. long and having an angle of about 60°. The apex of the V was anterior. The skin-flap was held back by a retractor. Little hæmorrhage was evident at this point in the operation. A small-bore trephine was then introduced into the wound and the bone removed. Immediately on withdrawal of the instrument there followed a thick, yellowish purulent material of a creamy consistence. Owing to the consistence this pus was easily removed with the handle of a sterile scalpel. A wound syringe was now introduced and after a little searching a clear, slightly blood-tinged fluid was extracted, being about 3 c.cs. in volume. A very mild solution of potassium permanganate was irrigated and on withdrawal there were a number of purulent flecks. As the animal still showed some pain on pressure, especially towards the base of the left horn, a hole was bored with a ¼ inch steel drill on the ventral surface of the horn. From this new site about 5 c.c. of quite fluid purulent and sero-purulent material flowed, which was collected in a sterile phial. The wounds were now irrigated with normal saline and a plug of iodised oleate of borax was inserted into the initial wound. The skin flap was replaced with a single suture at the apex. The secondary boring was left to drain and the animal turned loose in a paddock. New dressings were applied daily for about ten days.

Remarks.—The healing processes were attended by a fair amount of suppuration, but on examining about three weeks after the operation the primary wound was near complete reparation. The animal still evinced a slight inclination of its head, however. The pus, on examination, proved sterile and in connection with the habits of the animal we suggested that the abscess might have been resultant upon a blow—self-inflicted or otherwise.

*Case in series submitted for award under the N.V.M.A. Clinical Prize Scheme for Students, 1931.

"That in view of the great danger of dirty milk to consumers and particularly children, the Minister of Health be urged to take the necessary steps to enable a definite bacteriological standard for milk to be fixed and to make it an offence for producers and retailers to sell milk not of the fixed standard."—This resolution was received by the Public Health and Housing Committee of the County Councils Association from Caernarvonshire, Devonshire, Salop, Warwickshire and North Riding County Councils, and the Committee expressed their agreement with the principle of the establishment of a bacteriological standard for milk and have resolved that the Ministry of Health be so informed.

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Unless from State Accredited Abortion-free herds, all dairy and breeding cattle must have passed negative agglutination test for Bang abortion disease within 30 days prior to shipment into New York state. The health certificate accompanying the shipment must give the name and address of the laboratory or person approved for conducting the test; said test must not have been conducted within 21 days following parturition or abortion and a description of each animal including ear tag number of each grade animal or name and registration number, if pure-bred, must in all instances be given.

Abstracts

[**Radium Therapy in Dogs.** Passey, R. D. (1931-1932 Report of the Department of Experimental Pathology and Cancer Research, University of Leeds: British Empire Cancer Campaign—Yorkshire Council. pp. 11 and 12.)]

At the commencement of this highly-important section of his report the Director of Cancer Research (British Empire Cancer Campaign—Yorkshire Council) complains of the paucity of animals supplied for the investigation, despite every effort to secure them. Moreover, the handicapping limitation to this line of research presented by the small number of cases of spontaneous malignant disease (25) available for treatment with radium since the commencement of the investigation, several years ago, has been intensified by the premature destruction by the owners of several animals which have been treated.

The tumours have included epitheliomata of the skin, mammary carcinomata and a few sarcomata, the majority being treated by interstitial needling, which, probably because of the greater ease with which uniformity of dosage is maintained, is far more effective than surface application. In all cases the doses employed were based on those commonly in use in human cases of malignant disease.

Considerable success was achieved in the treatment of epitheliomata of the skin: in three out of the total of five cases treated the tumour completely disappeared, and although death occurred from other causes within a comparatively short period of time, there was no recurrence, nor were any signs of growth detected at *post-mortem*. This quality of permanence of remedial change is much less evident in the sarcomata, eight cases of which were treated, but in those the response was more rapid, justifying the description "reaction précoce" in some cases. Seven of these cases arose as a result of malignant changes in soft fibromata—changes which are not seen if these pedunculated growths be removed by means of a snare or crushing clamp, and which some veterinary surgeons are inclined to attribute to operative interference: it is, however, more likely that when a fibroma necessitates the use of the knife in preference to the snare malignant changes have already occurred. The rate of growth following unsuccessful treatment is definitely faster than before, but inasmuch as the dog with the largest tumour has remained perfectly well for 18 months since radiation combined with wide excision was employed, while the remaining animals only showed a temporary improvement, an inclination is felt to attribute the failure in these cases to inadequate dosage. Radiation was successful in promoting the disappearance of the tumours in two cases of mammary cancer, but the destruction of the animals was eventually necessitated by the involvement of other areas of the glands. Marked localisation was a striking feature in the whole series of cases, despite the fact that the disease was well advanced in the majority of animals.

Reference is made to the now-completed and published experiments of Mr. Spurrell, which significantly revealed no evidence of growth activity when the doses of radium were kept below destructive limits.

Treatment of a variety of types of malignant disease in a number of subjects, both human and animal, by an extract of parathyroid gland, yielded no lasting benefit; in fact, in the case of some of the animals there was a suspicion of enhanced activity of the tumour.

W. B.

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[*BACILLUS ABORTUS* **(Bang) Infection in the Horse.** Hulthen, Osw. *Sv. Vet-tidskft.* 1931. 25. Abst. *Skand. Vet-tidsft.* 1932. 3. 117. (Wall).]

The author records observations made on a case of fistulous withers in the horse which was operated on before a fistula developed. Material from the lesion was collected at operation, care being taken to avoid extraneous contamination, and was then injected subcutaneously into three guinea-pigs, the blood of which did not agglutinate *B. abortus* (Bang). Four weeks later the blood of two of the guinea-pigs was positive and of one was negative for agglutination test.

Agglutination occurred also with 0·005 c.c. of the horse's serum but not with 0·002 c.c.

The cattle on the farm, the only one on an island in a large lake, were infected with *B. abortus* (Bang) and the horse was stabled with them with no dividing partition. The horse came into contact with other animals only during infrequent visits to a town.

The author cited the case as an example of *B. abortus* (Bang) infection of bovine origin in the horse.

G. B. B.

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[**Small-pox and Cow-pox in the Malmöhus district of Sweden.** Magnusson, H. *Sk. Vet-tidskft.* 1932. 3. 131.]

A brief reference is made to an outbreak of cow-pox after vaccination of human beings against small-pox. In January (1932?), a case of small-pox was detected in Malmö. Extensive vaccination in the city and surrounding districts was carried out. On many farms where the dairy personnel had been treated a widespread and virulent outbreak of cow-pox supervened after an interval of 10-14 days, causing considerable economic loss.

Representations on the subject have been made to the Swedish Ministry of Health.

G. B. B.

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[**Poultry Tuberculosis.** Schmidt-Hoensdorf. *T.D.W.* No. 10. March 5th, 1932. 145.]

Avian tuberculosis is the most important poultry disease, and reference is made to the work of Eber and Ruebiger who have contributed much to general knowledge regarding its control. The disease is caused by the fairly well defined avian member of the tubercle group of bacilli, the identity of which may be established by cultural methods. Regarding intertransmissibility, the avian bacillus can be transferred to mammals and the pig is specially susceptible to infection. Spontaneous cases have been noted in the horse, ox, sheep, goat, deer, rabbit, mouse and rat, but the dog is completely insusceptible. The avian bacillus has been found repeatedly in man in whom it causes bone and kidney lesions. Infection of poultry with the mammalian bacillus is very difficult.

The disease is conveyed to premises by the purchase of infected hens, and contaminated feeding and drinking utensils, rats and mice, and eggs from tuberculous fowls may disseminate the disease. All breeds are alike susceptible, but infection is commoner in heavy breeds on account of their more limited ranging. Nutrition is important, as badly nourished hens offer less resistance. The pathological anatomy shows that the liver, spleen, bone marrow, intestines, lungs and serous membranes are most commonly affected. The author found the thymus gland tuberculous in 40 per cent. of diseased birds, and states that when the lesion is the size of a pea it may be palpated during life. On account of the liability to spread, intestinal tuberculosis is of greatest importance. The lesions occur on the mucous membrane or under the serosa and may reach the size of a hazel nut. A common site is the junction of the cæca, where they may attain the size of a hen's egg. Acute tuberculosis is very rare. The disease most frequently assumes a chronic course, and the symptoms, with the exception of "hopping," are not diagnostic.

The author refers to the great value of the tuberculin test in diagnosis, and states that it has modified the method of control. He has used it in about 20,000 cases, a proportion of which were controlled *post-mortem*. Testing is done intradermally and has no ill effect upon healthy birds. Since infected birds react to tuberculin 2-11 days after becoming infected, the author recommends testing and segregation for control. In itself this is not sufficient and should be supplemented by better housing, better hygiene, disinfection and suitable feeding.

W. L. S.

[**China-blue-lactose-agar as a Culture Medium in Investigations of Milk.** Gustafson, F. *Skand: Vet-tidskft.* 1932. 3. 88-94.]

The examination of milk samples, using China-blue-lactose-agar as a culture medium, is shown to be a rapid method of detecting the presence of certain organisms which serve as a criterion of the hygienic standard of milk. Details of the preparation of the medium and its use are furnished.

The author distinguishes between (*a*) coli bacteria which form blue colonies and produce gas, (*b*) acid-forming bacteria, with blue colonies without gas-formation, and (*c*) alkali-forming bacteria with white colonies. The writer concludes that numerous coli-bacteria show that the care of the milking animal must have been unsatisfactory. Numerous alkali-producing organisms suggest defective cleansing of milk utensils. Numerous acid-forming bacteria are related to insufficient cooling of the milk. The method is a modification of one demonstrated to the author by Professor Henneberg, of Kiel, in 1929.

G. B. B.

REVIEW

The Book of the Rat*

The rat, both as a carrier of disease to man and animals, and as a destructive agent, is a factor of considerable importance to the community. This comprehensive monograph by a German veterinary surgeon is accordingly opportune. After a short introductory portion—which deals *inter alia* with the zoology of the rat—the author considers briefly the various diseases carried by rats: there are twenty odd such diseases and each is dealt with briefly and succinctly and contains a short bibliography. This occupies the first 44 pages, the remaining 114 being devoted to methods of control of rats by animals, bacteria, poisons, gases and so on and to the various anti-rat measures taken by various countries. The volume is small and compact, well printed and full of interest. The illustrations are few in number, however, and there is no index. It is otherwise a most useful contribution to our knowledge of this pest in relation to the public welfare.

T. W. M. Cameron.

*Koller, Das Rattenbuch. Published by M. and H. Schaper, Hanover. R.M.9.

A Bill has now been passed making compulsory the registration of all dairies and cowsheds in the Isle of Man. Provision is included for loans of 2½ per cent. for carrying out structural alterations necessary to bring buildings into conformity with the Act.

Report

CITY OF BIRMINGHAM

ANNUAL REPORT OF THE CHIEF VETERINARY OFFICER FOR THE YEAR 1931

This report (the 51st of the series), which has lately been published by Major Brennan De Vine, M.C., shows very clearly how useful such a Department is, not only from a strictly veterinary standpoint, but also as a definitely established branch of the Public Health Service.

The report deals with the work carried out under the following Regulations and Acts:—

Public Health (Meat) Regulations;
Sale of Food Order, 1921, Part III;
The Salmon and Freshwater Fisheries Acts;
The Merchandise Marks Act, 1926, relating to foodstuffs;
The Agricultural Products (Grading and Marking) Acts, 1928 and 1931, relating to home grown agricultural products;
Also, the inspection of meat, fish, fruit and vegetables in the markets and retail shops throughout the city;
The veterinary work and licensing of animals under the Diseases of Animals Acts;
The veterinary work under the Milk and Dairies Acts and Orders;
The testing of milking herds under the Birmingham scheme for the eradication of tuberculosis;
The superintendence of the stud of horses belonging to the Corporation.

The staff consists of the Chief Veterinary Officer, six Veterinary Inspectors, eight lay inspectors, with clerical assistance.

Major De Vine makes the same complaint as others with regard to meat inspection, that the staff is too small to carry out complete inspection. Such a complaint should make the citizens of Birmingham feel proud that the Department exists to look after their interests, as it is well to repeat, what is self-evident to the powers that be, that in many large centres in England, meat inspection is not much more than a name, and is certainly not carried out to the extent it is in Birmingham.

One pleasing feature in the report is the account of the adoption of the electrolethaler for the stunning of pigs. If the earlier experience of its use is continued, it will clear away, for all time, one of the real obstacles to progress in humane slaughter.

The report of cases of trichinosis in the hospitals in Birmingham makes one hope that at least Major De Vine may be enabled to increase his staff sufficiently to enable him to carry out routine microscopical examination of all pork carcasses and products prepared at Birmingham, at all events for a sufficient time to show the freedom or otherwise from trichinosis of home-killed products.

The work under the Diseases of Animals Acts and Orders, whether much or little, requires constant supervision, and the payment of 6,401 visits shows that the premises concerned were regularly supervised.

Inspection of cows and cowsheds in the city area is very thoroughly carried out, as an average of one visit per month is paid to each shed, and presumably, the cattle will be examined at the same time.

Considering that the standard required for Grade A milk under the Milk (Special Designations) Order is only such as should be required for all milk, it is disappointing to see that only five farmers had qualified for the certificate.

Pasteurised milk.—One milk sold as pasteurised was found to contain living tubercle bacilli, and the infection was traced to its source. Whatever the merits or demerits of pasteurisation, one feels that all milk, whether intended for treatment or sale in raw condition, should be periodically examined for the presence of tuberculosis.

Presence of tubercle bacilli in milk.—Of 181 samples of milk from city dairy herds, 10 were found to contain living tubercle bacilli; a percentage of 5·5.

Of 1,657 mixed samples of milk from outside the city, 133 were found to contain living tubercle bacilli; a percentage of 8·0.

The average percentage of infected samples from outside the city supplies, for a period of 10 years, is given as 7·3.

The Birmingham scheme for the eradication of tuberculosis continues to receive support; 17 herds, comprising 643 animals, were in the scheme on December 31st and from 11 of these herds Certified or Grade A (T.T.) milk is supplied to the city.

In such a report as this, one is disappointed to find no reference to the age incidence of tuberculosis in food animals.

Particulars of the work required for the maintenance of the Corporation stud of horses complete the report.

The report is full of interest and valuable information concerning the activities of the Veterinary Department of a large and important centre. E. J. B.

Mr. H. S. Pedlingham's Large White sow, that holds the world's prolificacy record with 319 pigs in 17 litters, will be on show at Messrs. F. C. Martin and Sons' stand at the Three Counties Show. The sow is again in pig.

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There would appear to be a slight boom in Hackneys at the present time. Compared with recent years, the shows at both Glasgow and Barrhead were rather above the average.

VICTORIA VETERINARY BENEVOLENT FUND

ANNUAL GENERAL MEETING

The Fourteenth Annual General Meeting of the Incorporated Society was held at the Royal College of Veterinary Surgeons, 10, Red Lion Square, London, W.C.1, on Thursday, June 2nd, 1932, immediately after the Annual General Meeting of the Royal College of Veterinary Surgeons (reported earlier in the present issue).

In the absence of the President, Colonel Brittlebank, on important business, Lieut.-Colonel Simpson was voted to the chair on the motion of Mr. Willett.

Letters of apology were received from the President, who was detained in Manchester on pressing business, and from Captain Villar.

The minutes of the previous Annual General Meeting were read and confirmed.

Election of Officers

President. — The re-election of Colonel Brittlebank as President was proposed by Mr. Willett, seconded by Mr. McIntosh and carried unanimously.

Vice-Presidents.—The Chairman: As will be noted, we have very unfortunately lost through death this year one of our Vice-Presidents—Mr. Slocock. In Mr. Slocock the Fund had a very earnest worker indeed. He did a very great deal to raise money for the Fund and he also gave extremely useful and valuable advice when we had to deal with applications for relief. The Council have recorded their deep appreciation of his work and their sympathy at the loss which the members of his family have sustained by his death. The other three Vice-Presidents are Dr. Bradley, Mr. Sidney Villar and Mr. West, all of whom have done good service for the Fund in the past. If I may, I would like to propose the re-election of those three gentlemen.

The motion was seconded and carried unanimously.

The Chairman: With regard to the fourth gentleman, may I make a suggestion? Those of us who know the history of the Fund a little closer perhaps than some others, are aware that the North of England have done a very great deal in raising money on behalf of the Fund. Amongst those who have been most energetic in the North has been Captain Rider, and I would like to put forward his name in connection with the vacancy which occurs. In him we have a very energetic man, and his father and his mother are equally energetic in the cause, and we also feel that by putting such a young man in the position we shall have his services for a longer time. As a small gesture of thanks to the North of England I should like to propose the name of Captain Rider as a Vice-President.

The motion, having been seconded, was carried unanimously.

Hon. Secretary.—The re-election of Lieut.-Colonel P. J. Simpson as Hon. Secretary was proposed by Mr. Willett and, having been seconded, was carried unanimously.

The Chairman: Thank you very much. I have this Fund a little at heart, and shall continue to do whatever I can to help it.

Hon. Treasurer.—Mr. Arnold Spicer was unanimously re-elected Hon. Treasurer, and was thanked by the Chairman for his past services.

Auditors.—Messrs. Woodhouse and Wilkinson were unanimously re-elected Auditors.

Annual Report and Statement of Accounts

The Chairman: You have all had copies of the Report and Accounts. If there is anything arising out of them our Treasurer will be pleased to answer any questions.

Mr. Willett: I beg to propose that the Report and Accounts be received. (This was carried unanimously.).

Professor Wooldridge: Might it not have been an advantage if a little more had been said about the development of the Ladies' Guild? The only reference to it is that the previous meeting adopted the suggestion that one should be formed, but there is no further statement that it was actually brought into being and is now functioning.

The Chairman: This Report is only up to December 31st of last year. When we come to the item I will deal with it.

The Report starts on page 5 by mentioning the election of officers and the Annual Report for 1930. The Ladies' Guild is dealt with on page 6, and I can now give you a little further information with regard to the Ladies' Guild. It is now formed, and has a President, Vice-Presidents, Council and Secretary, and it is in a fairly healthy state. It is having its first public function at the forthcoming Congress of the National Veterinary Medical Association, when it is organising a dance, from which it hopes there will be a little profit, and which will eventually find its way into the coffers of the Fund. The Guild is working steadily up and down the country, forming working parties and so on, and I think it is really doing good work, although it has not really had a lot of time in which to arrive at final results. I hope that next year's report of this Fund will have incorporated in it the news that the Ladies' Guild has been able to give a fairly substantial donation to this Fund.

Major Gooch: At the first meeting which was called, was there any interest taken by ladies outside the wives of members of the profession?

The Chairman: Not actually at that meeting. There were about three. However, it was so

much in its infancy then that one could hardly expect outsiders to come along.

Professor Wooldridge: I doubt if we could expect ladies who are not more or less directly connected with the profession to take any very great interest in this except by the persuasion of certain enthusiastic members who can encourage them to perform some function on behalf of the Guild. One can hardly expect them to become members of this more or less local type of charitable institution.

Major Gooch: In answer to that, I did not secure the wife of any veterinary surgeon, but I secured six or seven ladies outside the profession who will take an active interest in it locally.

The Chairman: Are there any other questions arising on page 6? On page 7 it is interesting to note that nearly a full page is taken up with acknowledging various legacies and donations, which is satisfactory. We can only hope that they will take up two pages in future.

Professor Wooldridge: In regard to collecting boxes, I think more use might be made of them. It has been suggested to me by certain members of the Ladies' Guild that they would be able from time to time to get smaller donations from various parties which are held at their own houses—bridge parties and such like—where one's winnings are often placed to the credit of some charitable institution. These members have said that they have felt some diffidence in accepting coin under those circumstances, whereas if they were furnished with collecting boxes the people who were relinquishing their winnings would be able to put them direct into the box.

The Chairman: I agree with that suggestion. Of course there is no reason at all why members of the Guild should not have a box for that purpose, but if a party is being held for the Guild I think it is up to the Guild to supply those boxes.

Professor Wooldridge: They have no funds with which to buy boxes, and I suggest that the Fund in general should supply the Guild with sufficient boxes for this purpose. It is not a question of organised whist drives and so on; it is often a question merely of a private party of a few guests playing bridge. Many hosts before the game starts say, "It has been suggested that whoever wins should put at least half their winnings in the Benevolent Fund box." They do not mind doing that; the losers are not asked to put in anything at all. I think the boxes should be provided by the Fund, and not by the Guild.

Major Gooch: It would be very difficult, when prizes are in kind, to put them in the collecting box.

The Chairman: We will refer this matter to the Council, Professor Wooldridge. You will be present and able to state your views there.

With regard to page 8, the subscriptions should be more than we did get in, and it is hoped that every member of the Fund will try to secure the subscriptions of members of the profession whenever they can.

Pages 9, 10 and 11 show you the work of the Fund. It will be noted that the Fund has paid out a great deal of money this year—more than it can really afford, and yet cases have had to be turned down and no relief given where, had we been in better circumstances, undoubtedly relief would have been given.

Now we come to the accounts. Does anyone wish to pass any comment on them? If not, we will pass to the following pages showing the various funds. Then we come to the list of subscriptions and donations—pages 18 to 29. Are there any questions on that? The remainder of the Report is really advertisement.

I will now move that the Report be adopted.

The motion was seconded and carried.

Professor Wooldridge: Before you pass away from that, I think there are two items in particular in that list to which some special reference at this Annual Meeting should be made. One is with reference to the amount of money which was obtained from the proceeds of the dramatic play which was organised by yourself, Sir. I think the members of this Fund must express, and do express, their very great appreciation of the work which was put into that, and of the proceeds which have resulted from it. The other which I think calls for special comment is the very handsome subscription of Mr. Male of £50. If it had not been for these two very handsome amounts received as *subscriptions*, the amount of relief that has been able to be given would have suffered tremendously. I beg to propose a special vote of thanks in connection with those two items.

The motion was seconded and carried with acclamation.

Mr, Male: Thank you very much indeed. My wife and I were only too delighted to help this Fund, because we did feel that it was very badly in need of funds. After attending one of the meetings and hearing of the distressing cases, one could not help giving as much as was possible. If other members of the profession could hear the needs of this Fund I am sure they would do everything in their power to support it, in every possible way.

Major Gooch: I think we ought to mention also the North of England, who subscribed nearly £90, and I propose a special vote of thanks to be sent to them.

Professor Wooldridge: I am sorry I omitted to mention that fact, and I think it should be included in this special vote of thanks—as also the £50 which has been received from the National. The Council of the National would

probably appreciate a recognition of that donation.

Mr. Willett: Nor do I not think you can leave out the donation from the Mess Committee, Veterinary Department, Khartoum, of £137.

The Chairman: Is it your wish that these other people be included in this vote of thanks?

The meeting expressed hearty assent.

Election of 10 Members of the Association to Serve on the Council

The Secretary: The present 10 members are shown on page 3 of the Annual Report, namely, Professor Buxton, Major Gooch, Mr. Locke, Sir John Moore, Mr. J. Willett, Mr. Woods, Captain Wragg, Professor Wooldridge, Colonel Young and Mr. Jackson Young.

The Chairman: We are only allowed 10, so that we cannot make any addition to those. All these gentlemen are eligible for re-election.

Mr. Male: I propose their re-election.

The motion was seconded and carried.

The Chairman: Is there any other general business? If not, I thank you for your attendance.

A vote of thanks to the Chairman concluded the meeting.

N.V.M.A. Divisional Report

YORKSHIRE V.M.A.

MEETING AT LEEDS

A general meeting of this Division was held at the Hotel Metropole, Leeds, on Friday, April 29th, 1932. The President, Lieut.-Colonel J. A. Dixon, was in the chair and there were also present Messrs. W. T. McGregor, C. Secker Smith, H. G. Bowes, D. S. Rabagliati, W. Halstead, W. R. McKinna, J. W. Procter, E. F. McCleery, E. H. Pratt, J. M. McKellar, W. A. Ireland, E. Ackroyd, E. F. Hardwick, G. Whitehead, H. M. Holland, A. H. Watson, F. Halliday and M. Robinson. Mr. W. A. Milligan was present as a visitor.

The minutes of the previous meeting were confirmed and the Secretary intimated that apologies for absence had been received from Dr. O. C. Bradley, and Messrs. Clarkson, Bolton and G. H. Pollock.

Arising from the correspondence, the Secretary said that as in former years the Council had decided to join with the Lancashire Division in issuing an election circular in support of their candidate for the Council R.C.V.S. It had also been suggested to the Lancashire Division that, as on this occasion they had a candidate, the North of England should be asked to join in the circular.

Lieut.-Colonel Bowes expressed the regret of the members at the retirement of Mr. Clarkson from the Council of the R.C.V.S. after valuable services rendered for a period of more than 20 years: it was deeply regretted that Mr. Clarkson felt that he could no longer undertake the duties, which in late years had multiplied to such a great extent. The proposition of this record of Mr. Clarkson's services to the profession being made was seconded by Mr. A. H. Watson, and the Secretary was instructed to convey the best thanks of the Division to Mr. Clarkson.

It was intimated that the Council had appointed Lieut.-Colonel Dixon to be the delegate of the Division at the forthcoming Congress of the Royal Sanitary Institute at Brighton.

Correspondence was read from the General Secretary, N.V.M.A., and the Secretary, R.S.P.C.A., relative to treatment of animals of the poor. Arising therefrom, the President gave an account of the work of the committee which was dealing with this subject. The meeting expressed the opinion that, in areas where it was desirable, members who held whole-time appointments might be asked to take part in running centralised schemes.

The second article of the N.V.M.A. press series was brought to the notice of members and copies were taken by several members with a view to obtaining their publication in local newspapers.

The election of Mr. E. Ackroyd was proposed by Lieut.-Colonel Bowes, seconded by Mr. D. S. Rabagliati, and unanimously made.

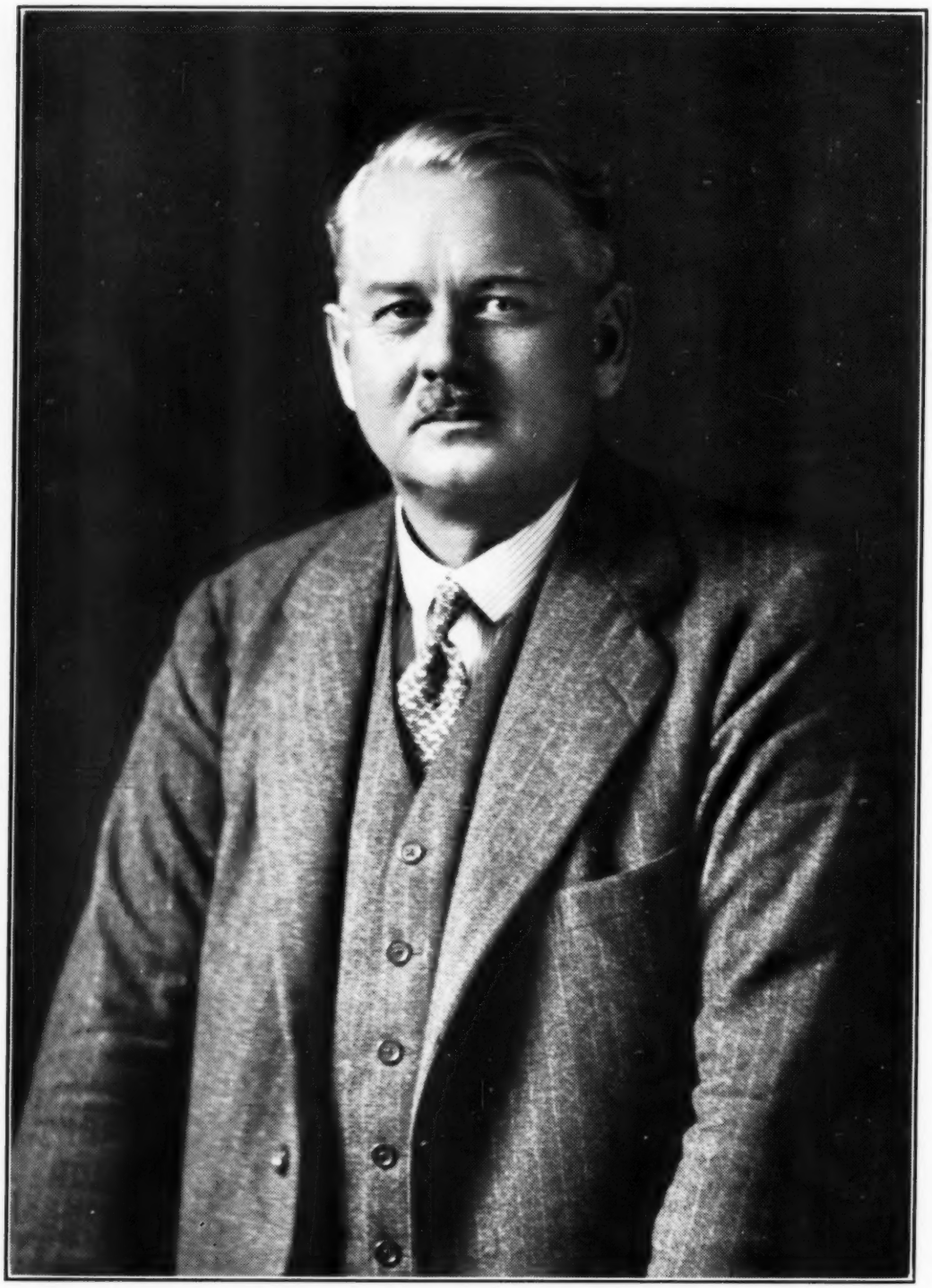
The Chairman now introduced to the members Mr. Hugh Begg, Chief Veterinary Inspector to Lanarkshire County Council, who gave an address entitled "Some Matters of Interest to the General Practitioner and the Veterinary Inspector."

After Mr. Begg had replied to the discussion he was accorded a hearty vote of thanks on the motion of the Chairman. [This address, and a report of the discussion, are reproduced earlier in this issue.—Ed. *V.R.*]

Mr. F. C. Scott now exhibited and described the "Uterine Valise," which is the name he has given to the appliance which he has ingeniously devised for the treatment of eversion of the uterus. This demonstration evoked great interest and inquiry among those present. [Mr. Scott's description of this appliance is given in our Clinical Section.—Ed. *V.R.*]

Mr. J. W. Procter gave notice of motion for the next meeting relative to the question of the expense involved by members of the Council R.C.V.S. in attending meetings of Council in London.

S. Sharp, *Hon. Secretary.*



ROBERT EUSTACE MONTGOMERY, M.R.C.V.S.
Late Advisor in Animal Health to the Secretary of State for the Colonies.

THE LATE MR. R. E. MONTGOMERY

AN APPRECIATION

(Contributed).

The profession has learned with profound sorrow of the untimely death of Mr. R. E. Montgomery, M.R.C.V.S., late Adviser in Animal Health to the Secretary of State for the Colonies.

His premature demise has come as a stunning blow, not only to his friends—who are many, for he was a lovable man, careless of his own interests and ever ready to help others—but to the whole profession and even more so to the Colonial Animal Health Service. The loss of his long-sighted ability and wise judgment leaves a gap in the Service which it will be difficult to fill. Few outside his personal friends know with what full-hearted enthusiasm he attacked those problems which not unnaturally confronted him in his last appointment so that he overcame mountains as though they were mole hills, or can appreciate the stimulating effect of his exuberant good fellowship upon others less well endowed with those qualities. Young members of the profession, and especially those of the Colonial Service, ever found in him a wise and kind counsellor, for he was that rare combination, scientist, administrator and man of affairs. Very many owe to him repeated acts of help and encouragement in their lives. The debt of this kind of service can neither be computed nor repaid. It would be out of place to attempt here any detailed notice of the part Montgomery played in the development of veterinary services overseas and at home. His last tour had delayed him in taking that active interest in questions of research in this country which would have resulted from his association with the Diseases of Animals Committee of the Agricultural Research Council. Research workers at home share with his colleagues on that Committee a due regard of the grave loss which they have sustained in common by the passing of one who was so well acquainted with the needs peculiar to veterinary research and whose sound knowledge and genial disposition would have gone far to establish that mutual understanding which is so essential.

Imbued with a love for and great pride in his profession, with a wonderful grasp of affairs and long experience, he ungrudgingly shouldered burdens which did not fall strictly within the confines of his official ambit.

The veterinary profession, whether as concerned with its arts or with its sciences, may surely feel proud to number as one of themselves a man who upheld so fully the highest traditions of the profession.

He added to knowledge, he greatly served the cause of veterinary science and he abounded in self-sacrificing kindness to others.

A FURTHER TRIBUTE

Professor W. Kearney, M.R.C.V.S., Veterinary College of Ireland, Dublin, writes:—

"As an ex-member of the Colonial Veterinary Service and an intimate friend of Montgomery for close on 20 years, I feel it my duty to pay this small tribute to his memory, and in doing so I feel I am also voicing the sentiments of the entire Colonial Veterinary Service, of which he was the acknowledged leader and trusted friend.

"Fate has been unkind to our profession and particularly so to the Colonial Service in removing from it such an illustrious member in the hey-day of his activities. Montgomery was a comparatively young man in his early fifties and the future held for him, and through him for our profession in the Colonies, a bright outlook indeed.

"The record of his career as detailed in last week's edition of this journal, needs no further embellishment from me. It suffices to show that Montgomery was an exceptionally brilliant man, with an experience in Colonial veterinary activities of an unique kind.

"His death will be surely felt by those colleagues of his who are still in the Service and who have looked to him for guidance and assistance, and his death will, I fear, retard the new awakening which that service was about to experience from his counsel as Adviser on Animal Health at the Colonial Office.

"To those of us who were privileged to know him by that symbol of affection 'Monty,' his death has caused a void which can never be filled."

SWEEPSTAKES AND HORSE BREEDING

Major-General Sir John Moore, K.C.M.G., C.B., F.R.C.V.S., writing in the *Morning Post* of June 4th, says:—"Captain Alec Campbell, in his letter in Wednesday's issue, hits the right nail on the head. As the horse is the central figure of all sweepstakes on horse races, it is quite right that he should have some participation in the benefits he helps to create. Anything more appropriate than the maintenance and fostering of an industry which not only means his very existence but is vital to his interests in every way would be difficult to imagine.

"In these days of financial stringency the provision of block grants imposes a difficulty of Government sanction. Direct taxation to provide for grants of any kind sits heavily on the community, but easement could be readily effected by the acceptance of the principle of sweepstakes on classic races to meet the urgent needs of an agricultural policy in respect to horse breeding in all its phases.

"It is quite true that, as Captain Campbell says, horses are and always have been dominant factors in war, and unquestionably one of the reasons of the defeat of the German forces during the late War was their inability to obtain suitable animals to carry on warfare.

"The spread-over afforded by sweepstakes would produce all the money required under

the Heavy and Light-Horse Breeding Schemes (including ponies) without adding one penny to taxation.

"Moreover, funds obtained in that way could be made to benefit other issues for which provision has to be assured by Government. For instance, the sum of £150,000 is the Treasury's quota towards the rebuilding of the Royal Veterinary College, London, an institution which has been fundamentally bound up with horses and other animals from ages past. A ready means of providing it would be through the agency of sweepstakes.

"It is a regrettable circumstance that so much money is going out of Great Britain for the support of Irish sweepstakes. If the number of prizes falling to persons in England as against Ireland, *viz.*, 439 as against 54 out of a total of 644 in the last sweep, is any indication of the volume of money leaving this country, then the sooner English money is diverted into other channels the better.

"Within a period of two years £15,633,928 have been subscribed by Irish sweeps, and the late sweep on the Derby, the largest of all, amounted to £4,138,486, with £2,801,643 of it going for prizes and £1,032,121 for Irish hospitals.

"It is surely time that we woke up to the fact that we require money for some of the immediate affairs of our own country."

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EXPORT OF HORSES

The Truth Re-stated

In a letter addressed to Sir Robert Gower (Chairman of the R.S.P.C.A.), published in *The Times* of June 9th, Sir John Gilmour, Minister of Agriculture, says:—"With regard to your letter of May 26th on the subject of the export trade in horses, your statement that 'the export trade in old, worn-out, decrepit horses to the Continent is a thing of the past' is certainly correct, since no horse which could be so described has been allowed to be shipped from British ports to the Continent of Europe for some years past.

"You are, of course, fully aware of the terms of the Diseases of Animals Act of 1910 and the Exportation of Horses Act of 1914, which make it illegal to ship any horse that has not been passed by a veterinary inspector of the Ministry after examination by him, as being fit to travel and to work without suffering. When the export trade in horses to the Continent of Europe was resumed shortly after the War, there were some irregularities in the manner in which these Acts were administered, but after a full inquiry you will recollect that the defects were remedied, and for the past 10 years the veterinary examination has been such as to enforce rigidly the maintenance of the full standard of fitness which the Ministry has interpreted as being the intention of those Acts.

"As regards the question of age, it is true that a number of horses over eight years of age are shipped, but in every instance such horses would be in good bodily condition and thoroughly fit to work without suffering; otherwise they would be rejected. It is well known that horses of considerable age are at work daily, and the point is one for consideration individually as to the fitness of the animal.

"When the Departmental Committee enquired into the working of the Acts in 1925 they found that the standard required was so high that a horse rejected as not being fit to work on the other side might be considered perfectly fit in this country, and that many of the horses rejected were in fact used again for work in Great Britain. The Committee further reported in paragraph 115 of their report (Cmd. 2495 that:

> We are satisfied from the evidence which we have received that no horse which could be described as decrepit has been passed for export by the port inspectors since the reorganisation of the Ministry's arrangements in 1921, and that the provisions of the Acts of 1910 and 1914 are being efficiently carried out.

"As the position is the same to-day your statement was a reiteration of the findings of the Departmental Committee of 1925. It is very regrettable that in some of the leaflets now being published the public are led to infer that the position at the present day is in any respect worse than it was when, say, the Committee inquired into the subject. The fact is, of course, that the conditions on the Continent are much better than they were at that time, since through the efforts of your admirable society the principal slaughtering establishment in Paris has adopted humane methods of slaughter, and further, slaughter by mechanical killers is becoming the practice in Belgium as it has already been for some years past in Holland."

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PRESERVATION OF THE FAUNA OF THE EMPIRE

Lord Onslow, presiding at a meeting of the Society for the Preservation of the Fauna of the Empire, which was held on June 7th at the offices of the Zoological Society, said he thought the £1,200 spent on the missions to East and West Africa had been of the greatest value in yielding information on the extent of the diminution of various species of wild animals and the steps required to protect those that remained from extinction.

Reverting to the subject of aeroplanes flying over game lands, which was discussed at the previous meeting, the Chairman said that they did not wish to attack ordinary commercial flying. He did not think wild animals were affected by ordinary aeroplanes flying over countries they inhabited. Wild animals took no notice of railway trains or motor cars, and in the Kruger Park, South Africa, lions that lay in the path would not get up when motor cars approached. The Society objected to the stampeding of wild animals by aeroplanes merely for the purpose of photographing them, against which Colonial Governments had taken preventive steps. That was the kind of thing that should be stopped.

Lord Rothschild, reopening the subject of the need for national parks or game reserves in British Colonies in Africa, said he thought it might be possible, now that Lord Passfield had left the Colonial Office, to raise again the question of creating a national park in the gorilla country in that part of Uganda adjacent to the Albert National Park in the Kivu, Belgian Congo. One of the objections raised by Lord Passfield was that there were several native tribes living in that particular piece of country, but it had since been shown that there were also native tribes living in the Albert National Park.

Sir Peter Chalmers Mitchell said that every possible step had been taken to secure the national park suggested by Lord Rothschild. He did not think Lord Passfield was to blame for the opposition, which apparently rested with the Colonial Office itself.

The report of the executive committee, in referring to the return of Colonel A. H. W. Haywood from his recent tour of the West African Colonies to inquire into the position of the wild game there, stated that the Society was now in possession of a valuable mass of data concerning

the Gambia, Gold Coast, Ashanti, and Nigeria Colonies. The reports, which definitely demonstrated that the inquiry was fully justified, would be submitted to the Colonial Office for dispatch to the respective Colonial Governments, with a request that they should be given also the earnest consideration of the Secretary of State for the Colonies.

Colonel Haywood, lecturing on his tour of West Africa, gave details of the diminution of various species of animals and birds, and of areas that, it was suggested, might be reserved as game sanctuaries, which, he added, should be placed in the charge of wardens to prevent the early extinction of some kinds of fauna in West Africa.

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RESEARCH IN SCOTLAND

Dealing with the research work in progress at the various institutes and centres assisted by the Scottish Department of Agriculture, the Annual Report of that body states that at the Animal Breeding Research Department at Edinburgh University the inquiry into the inheritance of milking capacity in dairy cattle was carried on with the assistance of the Imperial Bureau of Animal Genetics. A complete survey has been made of the literature bearing upon the subject of inheritance of milk yield. An investigation into the annual rate of replacement of heifers in cattle herds showed that the average rate is about 25 per cent.

The study, which had been temporarily suspended, of the degree of in-breeding in the Clydesdale breed of horses was taken up again during the year, and an investigation into the genetic variability of the Large White breed of pigs is being conducted, with special reference to prolificacy, economy, food conversion, rate of growth, conformation of the live pig, and carcass quality and measurements. The analysis of sex and sex characters in poultry formed the subject of further study.

At the Hannah Dairy Research Institute work relating to tuberculosis in dairy cows has been continued. Further progress has been made in the experimental scheme of eradication undertaken by the Institute. Seventeen of the 32 farms comprised in the selected area have already been cleared of infection, and a marked diminution has been effected in the number of reactors in the remaining herds.

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Dr. T. Lauder Thomson, County Medical Officer, Dumbarton, suggests that milk should be sold only in two categories: from tuberculin tested cattle or else completely pasteurised. No raw milk should be sold from untested cattle.

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In a report on the marketing of butter and cream issued by the Ministry of Health it is stated that butter ranks as one of the six most important foodstuffs consumed in this country. The total value of all supplies available for consumption annually in Great Britain during recent years is estimated at about £54,000,000, but the total value of the home output is less than £7,000,000, and its production absorbs less than 14 per cent. of the milk produced. About £2,500,000 worth of cream is eaten annually in this country, and of this the home industry supplies £2,000,000 worth.

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The first poultry abattoir in Scotland is to be opened in the Jewish quarter of Glasgow shortly. Jewish butchers will be obliged to bring their fowls to the yard to be killed by an official on the premises.

Notes and News

DIARY OF EVENTS

June 27th.—N.V.M.A. Committee Meetings.
June 28th.—N.V.M.A. Council and Committee Meetings.
June 29th.—R.C.V.S. Committee Meetings begin.
June 30th.—R.C.V.S. Annual Dinner.
July 1st.—R.C.V.S. Council Meetings.
July 1st.—Summer Meeting of the Mid-West and South Wales Division, N.V.M.A., at Shinfield, Reading.
July 2nd.—Meeting of the North of England Division, N.V.M.A., at Newcastle-on-Tyne.
July 6th.—R.C.V.S. Summer Examinations begin.
July 7th.—Meeting of the Central Division, N.V.M.A., at the Zoological Gardens, Regent's Park, N.W.1.
July 22nd.—Summer Meeting of the Lancashire Division, N.V.M.A., at the Harper Adams Agricultural College, Newport, Shropshire.
Aug. 8th-13th.—N.V.M.A. Jubilee Congress at Folkestone.

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ROYAL VETERINARY COLLEGE APPEAL

Donation from H.M. the King

His Majesty the King has given a most gracious and generous lead to all animal lovers by sending a donation of £100 to the rebuilding fund of the Royal Veterinary College, Camden Town, of which he is Patron.

In a letter to Professor F. T. G. Hobday, principal of the College, Sir Frederick Ponsonby, Keeper of the Privy Purse, states:—

> "The King was much interested to hear that steps were being taken to place the Royal Veterinary College on a firm financial footing. His Majesty, as Patron of the College, is well aware of the importance of the work that is being carried out at the College, and knows how essential veterinary science is to both agriculture and horse breeding, not only in this country but throughout the British Empire.
>
> "The King is glad to learn that an appeal for funds in aid of the College has been started, and feels sure that it will meet with a generous response from all lovers of animals.
>
> "I am commanded to forward you the enclosed cheque for £100 as a donation from His Majesty to this fund."

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PERSONAL

Birth.—Wooldridge. On June 16th, 1932, at 27, Welbeck Street, W.1, to Evelyn B. (neé Champion) and W. R. Wooldridge, a son.

Mr. Lawrence Tipper's Travels.—"The Clubman," writing in the *Birmingham Gazette* of June 14th, pays a tribute to the "remarkable enterprise" of Mr. Lawrence C. Tipper, M.R.C.V.S., Chairman of the Birmingham Chamber of Agriculture. "On reaching the age of 70, when he retired after a strenuous business life" (writes "The Clubman") Mr. Tipper decided to see the world, and since then during the past seven years he has "done" most of the Western countries and the Pacific pretty thoroughly.

"Next week he sets out on another little excursion—this time across Canada as a guest of the Canadian Government and the Canadian Pacific Railway Company, and as a representative of the Empire Farmers' Party.

"Travel is the wine of life to Mr. Tipper, and in his 78th year he thinks no more of starting on his two-month tour throughout the vast Dominion than the average young Birmingham man contemplates a week-end sojourn at Skegness. Ever cheerful and full of enlightening talk whenever one meets him, Mr. Tipper appears to have solved the problem of enjoying every moment of what in a less active man might be considered the eventide of his life."

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R.C.V.S. OBITUARY

Jackson, Stafford, 70, Low Hill, Liverpool. Graduated New Edinburgh, July 24th, 1885; died June 12th, 1932, aged 72 years.

In reference to Mr. Jackson's death, the *Liverpool Post and Mercury*, of June 13th, states:—"A link with the days when most of the transport in Liverpool was done by horses has been severed by the death, yesterday, at his residence, The Haven, Regent Road, Wallasey, of Mr. Stafford Jackson, well-known in Liverpool as a veterinary surgeon.

"Mr. Jackson, who was 72, started veterinary work as a youth with a Mr. Elam at Lowhill, and eventually became proprietor of the business. In the pre-motor days Mr. Jackson had an extensive business, with about twenty men at the Lowhill Branch, and also various other branches, all equipped with shoeing forges.

"He was an exceptionally strong man and could accomplish feats which were impossible to some of his most powerful blacksmiths. In his younger days he was an athletic individual and was a keen boxer and lacrosse player. He was veterinary surgeon to the Liverpool Cowkeepers' Association.

"Mr. Jackson had been ill for some time. He leaves a widow and son and daughter."

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Robb, Andrew, T.D., 16, Ward Street, Glasgow. Graduated London, July 13th, 1899; died June 13th, 1932.

Major Robb, whose death took place at his residence, Hillcrest, Bearsden, Glasgow, was the senior partner in the firm of Andrew Robb and Sons, 16, Ward Street, Glasgow. The second son of the late Mr. Andrew Robb, the deceased gentleman was educated at Glasgow High School, and after qualifying as a veterinary surgeon entered his father's business in the city. Keenly interested in Territorial Army work, he was associated for many years with the Glasgow Yeomanry Division. At the outbreak of war he went to America in connection with the purchase of horses for the Army, and in 1915 was sent to France with the Royal Army Veterinary Corps. He served until the Armistice, prior to which he was promoted to the rank of major. Until five years ago he acted as D.A.D.V.S. to the Lowland Territorial Division. He was one of the best-known amateur horsemen in Scotland.

Mr. Robb, who had been in ill health for a considerable period, was associated in business with his brother, Professor William Robb.

The funeral to Glasgow Necropolis, which took place on Wednesday, June 15th, was attended by a very large company of mourners. The pall-bearers included Professor William Robb, brother, and Mr. Harry Robb, nephew. Amongst the mourners were to be noted many members of the Lanark and Renfrew Hunt, Officers of the Queen's Own Royal Glasgow Yeomanry, and representatives of the City of Glasgow Territorial Army Association. The veterinary profession was represented by the following: Principal Whitehouse, Glasgow Veterinary College; Major T. Dalling, Beckenham, Kent; Mr. W. S. McMurrich, Helensburgh; Mr. John Taylor, Edinburgh; Mr. G. W. Weir, Glasgow; Mr. Alex. Thomson, Hon. Secretary of the West of Scotland Division; and Major J. G. McGregor, Stirling.

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ARMY VETERINARY SERVICE

London Gazette—War Office—Territorial Army

June 10th.—Major J. McCunn resigns his commission, and retains his rank, with permission to wear the prescribed uniform (May 19th).

Territorial Army Reserve of Officers

June 17th.—Major W. H. J. Kirk, from Active List, to be Major (June 18th).

Movements of Officers

The following officers are at present in this country on leave from India:—Lieut.-Colonel E. Clive Webb, O.B.E., F.R.C.V.S., Major S. O'Donnel, M.C., and Major H. Bone, M.C.

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R.A.V.C. Annual Dinner

The following is a list of Officers who attended the above Dinner on Friday, June 10th, 1932, at the Hotel Victoria:—

Major-General W. S. Anthony, C.B., C.M.G., Director-General, Army Veterinary Services, presided.

Lieut.-General Sir Felix F. Ready, K.C.B., C.S.I., C.M.G., D.S.O., Quartermaster-General to the Forces, was the guest of the evening.

Major-Generals.—Sir Layton J. Blenkinsop, K.C.B., D.S.O., Colonel Commandant; Sir John Moore, K.C.M.G., C.B., F.R.C.V.S.

Colonels.—J. J. Aitken, C.M.G., D.S.O., O.B.E.; H. S. Mosley, D.S.O.; W. E. Schofield, O.B.E.; J. J. B. Tapley, D.S.O.; A. G. Todd, C.B.E., D.S.O.

Lieut.-Colonels.—E. P. Argyle, D.S.O.; J. S. Bowden, O.B.E.; A. E. Clarke; P. W. Dayer-Smith, O.B.E.; O. S. Fisher, O.B.E; H. Greenfield, O.B.E; H. J. Holness, D.S.O.; F. D. Hunt, O.B.E.; G. B. C. Rees-Mogg, O.B.E.; F. C. O'Rorke, C.M.G., F.R.C.V.S.; E. C. Webb, O.B.E., F.R.C.V.S.

Majors.—B. R. Body; A. B. Bowhay, O.B.E.; J. Bell; E. C. Bowes; J. J. Clune; J. Harrison; T. Hicks; F. Hogg; W. B. Howe; G. A. Kelly; M. J. Killelea; T. Lishman; G. Lloyd, D.S.O., F.R.C.V.S.; W. St. J. F. MacCartney; M. A. Murphy; S. O'Donel, M.C.; J. W. O'Kelly; G. E. Oxspring; E. S. W. Peatt, O.B.E., F.R.C.V.S.; J. J. Plunkett, O.B.E.; J. Robertson; F. R. Roche-Kelly; C. G. Saunders, D.S.O.; S. L. Slocock, M.C., F.R.C.V.S.; R. T. Smith; J. Southall; R. H. Stalker; H. Stephenson, M.C.; R. C. G. Thwaytes; C. H. S. Townsend, O.B.E., M.C., F.R.C.V.S.; P. F. Woodland.

Captains.—F. W. Goodall; J. J. Kane; A. P. MacDonald; A. J. Warburton.

Lieutenants.—W. J. Gray; P. A. Reeves; J. R. Stewart.

Free State Veterinary Surgeons Act

SUCCESSFUL FIRST PROSECUTION

"This is the first prosecution to be brought by the Veterinary Council of the Free State since its establishment under the Veterinary Surgeons Act passed last year," said Mr. G. O. Sullivan, Barrister-at-Law, in Athenry District Court, when three summonses were brought against Mr. Patrick J. Nolan, North Gate Street, Athenry, "for not being a registered veterinary surgeon did represent, or hold himself up as being a proper person to practice veterinary surgery or veterinary medicine, on various dates between May 9th, 1932, and May 14th, 1932, and did on May 11th practice veterinary surgery by performing an operation on a colt, the property of Edmund Kennedy, Kingsland, Athenry; and did perform a similar operation on a colt, the property of Michael Higgins, Lisheenkyle, Athenry, contrary to the Veterinary Surgeons Act, 1931."

Mr. O'Sullivan said that the defendant published in a local paper a notice that he would attend different places in the district for the purpose of operating on horses.

Mr. Joseph Lawrence Dennigan, Registrar of the Veterinary Council, said that defendant was not on the register.

Michael Higgins gave evidence of Nolan having performed an operation on a colt, for which witness paid him 5s.

To Mr. St. John Blake (for defendant), witness said that the work was done satisfactorily, and witness was aware that Nolan and his father carried on the work in that district all their lives.

Mr. Blake said that a number of men like Nolan had been performing these operations throughout the country, and the skill and experience in such work remained in the family for generations. Nolan was making a living out of the work, and men like him were a great benefit to small farmers, who were charged very small fees. Defendant would undertake not to violate the Act any more.

Mr. O'Sullivan said that it was common knowledge that Nolan earned £5 a day at this work, and no one knew better than Nolan that he was acting illegally.

Justice Cahill said that there was no doubt that Nolan was aware that he was doing wrong, and had been fined £3 for cruelty to a horse in one of these operations. He was, however, taking into account that Nolan gave an undertaking that he would not practise any more, but if there was a subsequent prosecution he would impose the full fine.

"This is the first prosecution in the Free State," added the Justice, "and the responsibility falls on me in fixing a fine as a headline. I am fining the defendant £10 in each of the three cases with three guineas costs in each case.

On appeal by Mr. Blake, the Justice reduced the fine to £5 in each of the three cases.—"*Irish Times*," *June 17th*, 1932.

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MILK CONSUMPTION IN GREAT CITIES

A comparison of milk prices and consumption in London, Glasgow, Berlin, Hamburg, Copenhagen, Paris, New York, and Chicago has been published by the Empire Marketing Board ("Milk Price Margins," H.M. Stationery Office, 1s. net). The report states that *per capita* consumption of milk, excluding cream, is lowest in London, Paris, and Berlin. Each Parisian drinks about one-third of a pint of milk a day, each Berliner two-fifths of a pint. Consumption in London is about midway between these. Consumption is highest in New York, Copenhagen, and Hamburg. The New Yorker drinks a pint of milk a day, the inhabitant of Hamburg about four-fifths of a pint, and of Copenhagen three-quarters of a pint.

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To mark the 75th year of their existence, Messrs. H. Hauptner, the well-known Berlin firm of instrument makers, have issued (in German) a truly remarkable and profusely illustrated catalogue. The first part (120 pages) outlines in most interesting fashion the use and invention of veterinary instruments from the earliest times till recent years, followed by a history of the growth and work of the firm of H. Hauptner.

The second part extends to over 300 pages of illustrations of the hundreds of Hauptner instruments and mechanical aids, etc., used in veterinary surgery and medicine.

Copies of the catalogue can be obtained in this country from Messrs. W. Bredt, Ltd., 38, Great Tower Street, London, E.C.3.

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

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CALCIUM THERAPY AND MILK FEVER

To the Editor of the Veterinary Record.

Sir,—Following the article on the treatment of milk fever by the injection of calcium gluconate, by Mr. Hepburn, F.R.C.V.S., in your issue of April 2nd, I determined to give this line of treatment another trial, in spite of past failures with it. My decision was further strengthened by the eulogistic statements of others as to its efficacy. I must say, at the outset, that in the majority of cases treated recovery has followed *without udder inflation*. In two particular cases it has succeeded where udder inflation failed. In three other cases, udder inflation had to be resorted to, as it definitely failed. There has, however, been an unfortunate aftermath, and so far, in 50 per cent. of the cases, abscess formation has followed at the site of inoculation, in spite of every antiseptic precaution at the time, the use of distilled water in preparing the solution, boiling for ten minutes and repeated filtering: followed immediately after injection by massage and hot fomentations. At first muslin was used as a filter, but I found that I got a precipitate and on advice of a chemist friend a felt filter has been subsequently used. As a result of the unfortunate sequelæ in these cases, the stockowners have refused to have any more cases treated in this manner. I have had no actual sloughing, although when I previously tried this treatment, and did not filter, I had one case of sloughing, with a cavity large enough to throw a cat through! I admit that the gluconate treatment is a cleaner method, and does not interfere with the udder, but it does not add to what little reputation one still has, to have cows going about with swellings as large or larger than their udders. My experience, apparently, is not unique, as on more than one occasion within the past month, when visiting a case, I have been told of cases treated by others, with the same sequelæ, and have been requested to inflate the udded only. A traveller for a very large firm has informed me that this is a somewhat general experience amongst practitioners, and I would ask them why they will not report their experiences. This is a new line of treatment, and it seems a great pity that a preparation free from these after-effects cannot be put in our hands. A preparation is on the market, from various distributors, styled "calcium dextrose," which, it is stated, has been used with remarkable success in cases of milk fever and is free from sloughing or abscess formation risks. I have seen statements from practitioners to this effect,

but I would ask them to report their cases in this paper. I, as a general practitioner, wish to know if they also resort to udder inflation, or rely only on the injection, and whether a really bad case (such as one which goes down in the night and is found nearly dead when the herdsman arrives) will recover by its use.

If they carry out udder inflation as well, in really bad cases, then no reliable opinion can be given on the efficacy of this new treatment. Last year in these columns, I drew attention to the value of an intravenous injection of a 10 per cent. solution of calcium chloride (first brought to my notice by Mr. Hancock), and gave the name of the American distributors. With their preparation all went well, but when their supply gave out I had to have some put up in this country, and then the trouble started.

In spite of every possible precaution, abscess formation and sloughing followed, and in one particular case an extensive area on both sides of the neck sloughed away, exposing the trachea and superior jugulars, both of which jugulars had to be ligatured in a hurry to prevent fatal hæmorrhage. Physiologists can note that a cow can live if one jugular is ligatured on each side of the cow! It was then suggested that the intravenous injection should be made into the milk vein. This was done in three cases, and as a quick and effective way to destroy a cow, I have not found its equal; indeed, for the benefit of chemists, toxicologists, and research workers (who wish to avoid brain destruction by the bullet), I may, without fear of contradiction, tell them that the injection of any appreciable quantity (four ounces sufficed in one case) into the milk vein of a cow of a 10 per cent. solution of calcium chloride will cause her death in most cases before there is time to withdraw the needle.

Nobody, it appears, can inform me why, if the same solution is injected into the jugular vein of a cow with milk fever, you get a more rapid recovery than by any other line of treatment; and yet if it is injected into the milk vein you get practically instantaneous death. It was suggested by one reputed authority on Materia Medica (after a mass of figures and calculations) that 10 per cent. was a poisonous dose, but if this was the case, then the same result would follow an intravenous injection containing it, made anywhere.

I have not tried calcium gluconate by this route, but if others have done so, then I should like to know what happens.

For the time being I am reverting to the time-honoured udder inflation, and in this line of treatment I consider that success is enhanced if the udder is stripped right out before inflation and the udder then inflated as tightly as possible. I notice that many still tie the teats. A much better plan is to allow excess of the inflation to escape and then to push up the teats the ordinary medicinal teat bougies, giving instructions to withdraw them in 3 or 4 hours. These effectively stop escape of air or oxygen, and the teat circulation is not interfered with.

Yours faithfully,

1, Cross Road, J. F. D. Tutt.
Winchester.
June 11th, 1932.

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DENTAL ANÆSTHESIA IN THE DOG

To the Editor of the Veterinary Record.

Sir,—I am again indebted to Mr. Tutt for his further letter and will certainly look up the references he quotes. The substance of this information must be new to most readers of the *Record*. Even now the *modus operandi* of Mr. Tutt's supraperiosteal anæsthesia is still obscure: I can only imagine that the anæsthetic fluid has to traverse bone in order to reach the nerve of the tooth. The *desirability* of a dental syringe was never disputed, it was to bare *necessity* that I have kept hitherto. Not everyone possesses a Raison or other dental syringe (?)

Professor Wright reminds us that there is more than one way of approaching a problem—somewhat off the immediate point but a valuable contribution to canine dentistry. As the ways of individual surgeons vary appreciably I deliberately avoided dogmatism in my paper and kept to the main points and provided three figures which I thought saved a lot of explanation. I have for long regarded experimentation on the cadaver as a very advisable procedure before attempting any new operation on a live animal. If one does this and if one has a reliable knowledge of the principles of general surgical technique (surgical antisepsis, etc.), then the actual performance should be comparatively simple.

Is it really impossible to render a small area of mucous membrane free from pathogenic bacteria for the brief time required for making an injection? The sole practical evidence of failure to do so would be the occurrence of suppuration at the site of injection, and I have heard of no such untoward sequel.

I think that, from the viewpoint of surgical handicraft, local anæsthesia is superior to narcosis or general anæsthesia (with equal efficiency, of course) and as such should be developed much more. We lag behind other nations in this respect. The obsolete Animal Anæsthetics Act is perhaps the main hindrance.

Yours faithfully,

Addlestone. J. T. Edwards.

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"VENEREAL SARCOMA" OF DOGS

To the Editor of the Veterinary Record.

Sir,—Would you kindly grant me space to request members of the profession to send me cases of "venereal sarcoma" or "venereal granuloma" in the dog? I should prefer the bodies for *post-mortem* examination of dogs exhibiting secondary involvement of the superficial inguinal lymphatic glands.

I have the honour to be, Sir,
Your obedient servant,
Tom Hare.

Department of Pathology,
Royal Veterinary College,
London, N.W.1.
June 16th, 1932.

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R.V.C. FLAG DAY

To the Editor of the Veterinary Record.

Sir,—May we, through the courtesy of your columns, express our thanks to those members of the profession, and their families, who so kindly assisted in the R.V.C. Flag Day on May 25th last?

The total takings on that day amounted to £603 0s. 3d. which sum has been placed to the credit of the Poor Out-patients' Clinic of the Royal Veterinary College.

Yours faithfully,
R. W. Southern,
P. G. King,
Joint Hon. Organisers,
R.V.C. Flag Day.

Royal Veterinary College,
London, N.W.1.
June 15th, 1932.